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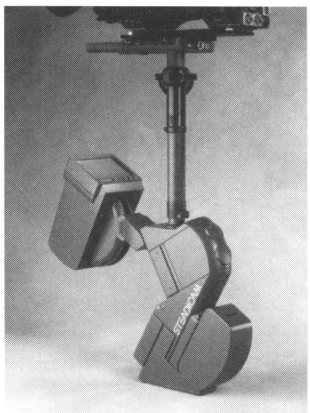

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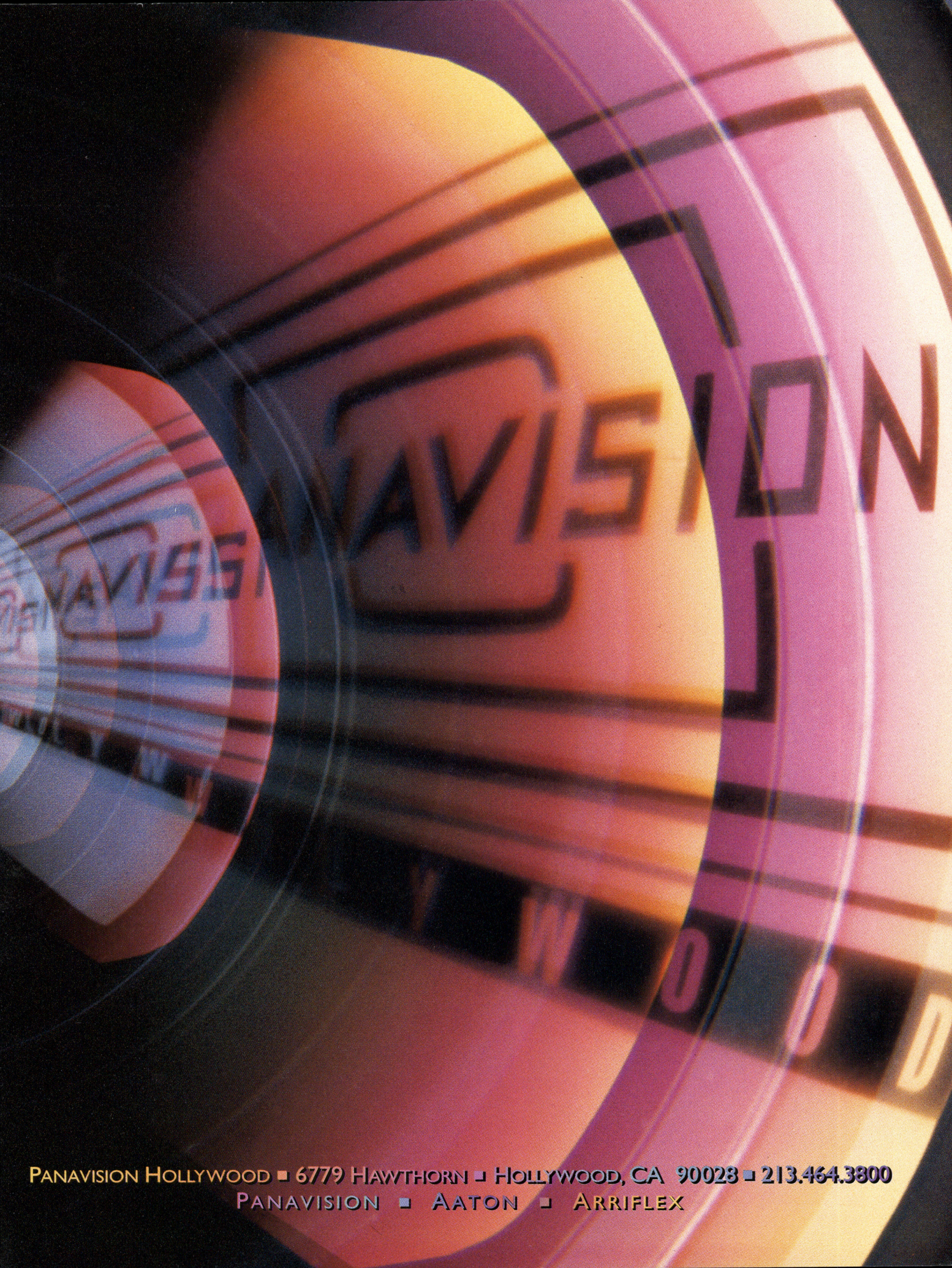
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On Our Cover: With the help of cinematographer Russell Carpenter and some state-of-the-art special effects, Arnold Schwarzenegger pilots a Harrier jet in *True Lies* (photo by Zade Rosenthal).

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American **Cinematographer** (ISSN 0002-7928) established 1920 in 74th year of publication is published monthly in Hollywood by ASC Holding Corp., 1782 N. Orange Dr., Hollywood, California 90028, 1-800-448-0145, 213-969-4333, U.S.A. Subscriptions: U.S. $30; Canada/Mexico $45; all other foreign countries $55 a year (remit international Money Order or other exchange payable in U.S.). Advertising: rate card on request to Hollywood Office. Fax 213-876-4973.

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Second-class postage paid at Los Angeles, California and at additional mailing offices.

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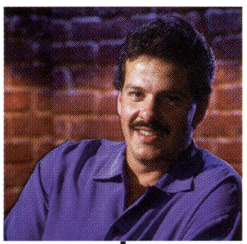
Printed in the USA.
POSTMASTER: Send address change to American Cinematographer Magazine, P.O. Box 2230, Hollywood, CA 90078.

even in my darkest moods, i never lose control.



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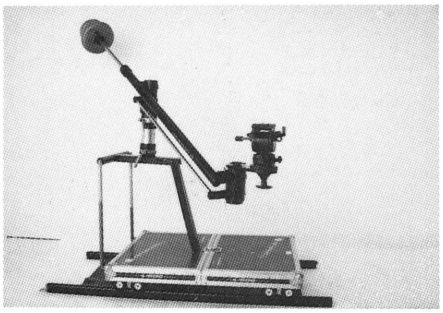

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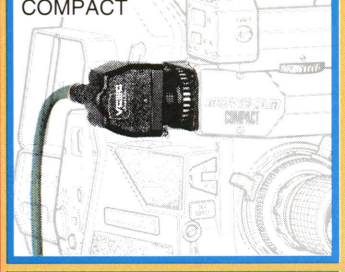

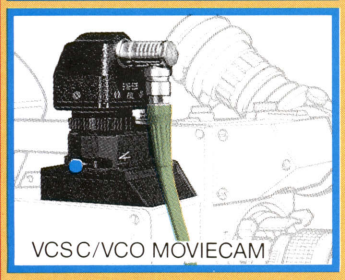

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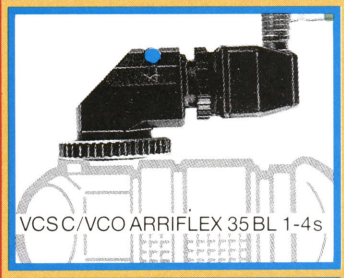

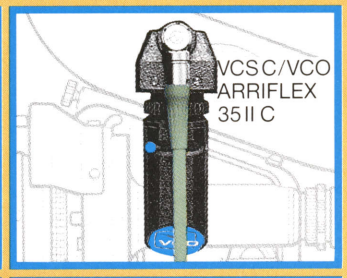

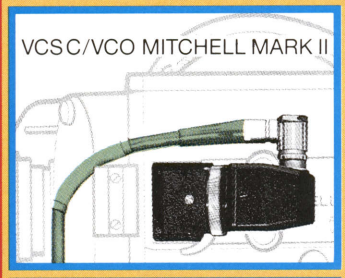

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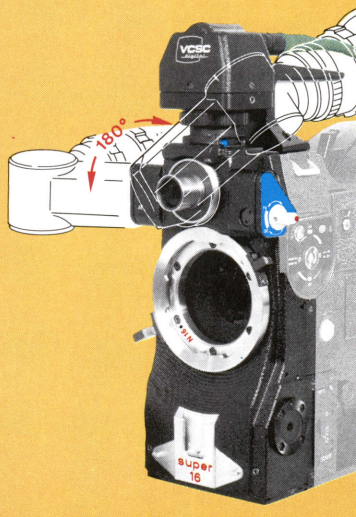

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300 frames, PL mount: New high-speed, effects and production camera at Clairmont: the Wilcam W12

The W12 is a completely new HS camera, designed to do what *you* need done. It's not a modification of military instrumentation cameras based on 30-year-old technology.

The way instrumentation cameras are used, there's never an optical printer involved. But for *your* purposes, there often is. For perfect print steadiness, your camera's movement should be closely compatible with the printer's movement.

Same registration as optical printer

For example: instrumentation cameras can be built with as many registration-pins as the designer wants. (Some have eight.) But *your* camera should have the same number as the optical printer (two); and those pins should act on the same perfs (relative to the frame) as the printer's pins. The W12 has the same number of pins and they act on the same perfs. And, like the printer's, the W12's pins are full size.

Vacuum gate, film clip holder

In the gate, the W12 pressure-plate uses a vacuum back, for best possible film flatness. There's a registered clip holder at the groundglass. The shutter is fixed: 120 degrees. The mirror spins at up to 9,000 rpm, so it's made of Berylium—stronger and lighter (and more expensive) than glass.

Gentle takeup

With this camera, you don't have to take up film slack by hand. When you throw the Power On switch, after threading film, the W12's torque motors slowly take up the slack. The camera then goes into Standby mode and waits. When you throw the Run/Stop switch, the camera accelerates steadily to the set speed. 0 to 300 fps takes between 2 and 2½ seconds. 0 to 150 takes half that.

Even wrap

Once at the selected speed, sensor arms maintain even tension in the feed and takeup rolls as they change size. Regardless of speed, the wrap at the core is the same as the wrap at the outer edge. *No cinching.* Only a torque motor can provide this smooth a takeup.

Stops in about 16 feet

At the end of the roll, infrared sensors signal the camera to stop instantly. Mid-roll stops: from 300 fps, the W12 stops in about 16 feet. It also gets from 0 to 300 fps in around 16 feet. Consistent control; and *no wasted film.*

Magazines

All W12 magazines are identical 1000 footers, gear-driven by motors inside the camera body. Feed and takeup magazines are separate. You mount *two* on the camera body—a full one for feed, an empty one for takeup.

Choice of lenses

The W12's mirror takes up more space than standard mirrors. Nevertheless, there's a generous choice of lenses. You can use our 14mm Zeiss T2 and our six Zeiss T1.3 Superspeeds from 18 to 85mm (including the new T1.3 65mm). Among our spherical and anamorphic zooms, eighteen different types will work. In telephotos: twenty-two different types, from 150 to 1600mm.

PL mount advantages

You can color-match your W12 footage with your 535, Moviecam or 35BL footage. And you can save money by not having to rent a separate set of lenses.

System accessories

The W12 works with the ARRI mattebox and follow-focus. You can mount all the effects filters you're used to mounting on the ARRI 3. If you're also shooting with one of our sync-sound cameras, you can use the same accessory system you've rented for that camera.

No technician or AC power needed

Another way you save money is by not hiring a special operator/technician. The W12 doesn't need one. It also doesn't need AC power. It comes with a 48V battery that will run about 10,000 feet of film on one charge. Or you can yoke two standard 24VDC batteries together.

Rotating finder, upright image, video tap

The viewfinder system and video tap camera are enclosed within the camera body door. There's a knob with two eyepiece image modes: normal and ten times magnified. The viewfinder rotates through 270 degrees and the image stays upright.

29,600 speeds, all crystal controlled

You enter the speed you want on the camera's electronic control panel. The digital readout displays your choice, to two decimal places—hundredths of a frame. (Between 4 and 300 fps, you therefore have 29,600 speeds to choose from!) All with the perfect accuracy of crystal control; no problem with HMIs.

Variable speed

When you change speed during the shot, the transition is smooth. Using the Speed Aperture Computer, you can change from any speed to any other speed between 4 and 300 fps, in tenths-of-a-frame increments. The starting and ending speeds are crystal-controlled. And, of course, the lens iris is changed to keep exposure consistent.

Strobes, Remote and Interlock

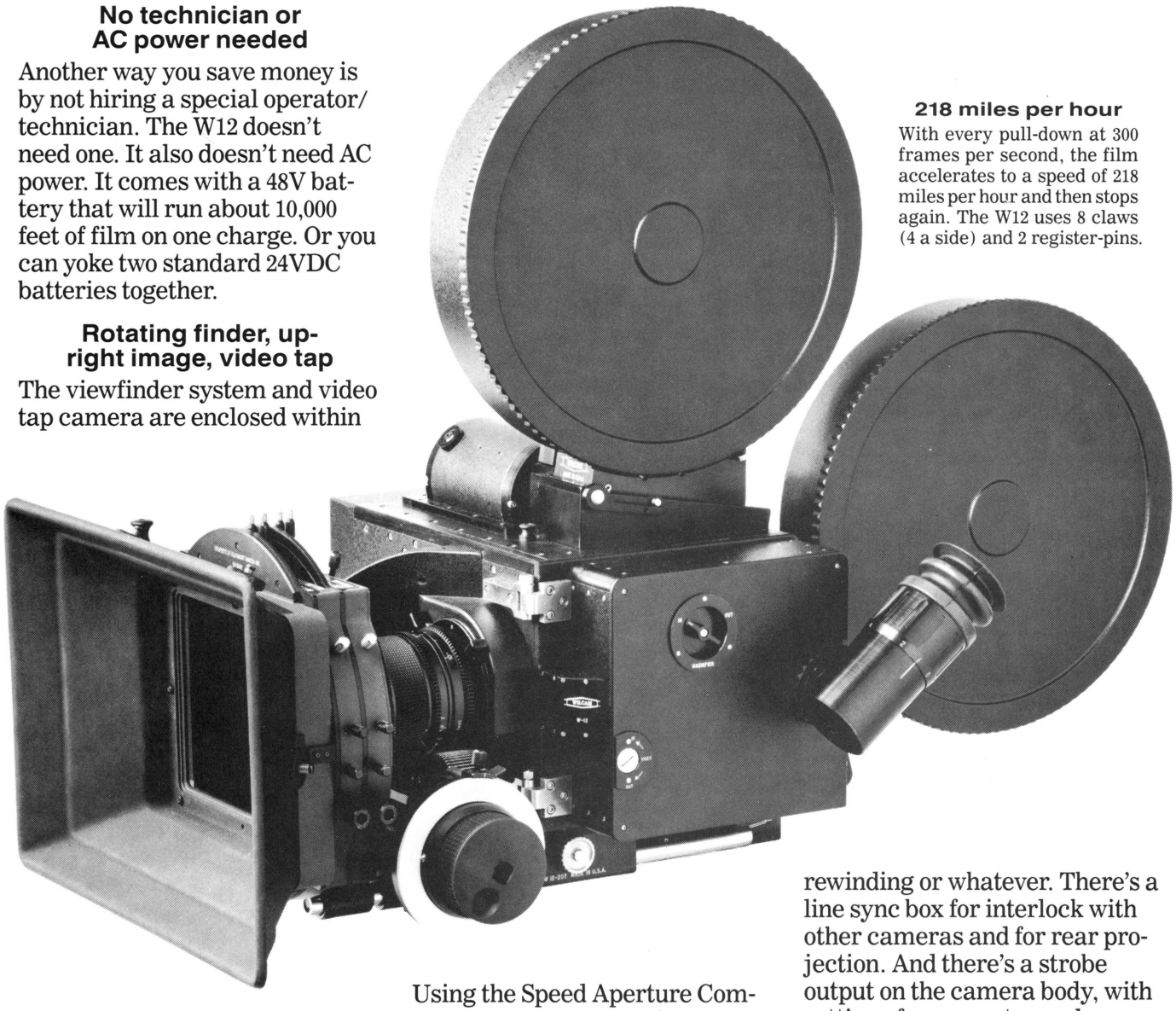
Accessory connection is via the 19 pin Galloway Group Interface. With an accessory box, you can make precise frame counts, for rewinding or whatever. There's a line sync box for interlock with other cameras and for rear projection. And there's a strobe output on the camera body, with settings for one or two pulses for each pulldown/exposure cycle. There's also quartz-locked remote control.

Doesn't brew coffee

There are a few things this camera *won't* do: It doesn't run in reverse; you can't shoot time-lapse, single-frame or time-exposure with it. And without a lens or film but with two magazines, it weighs 77 pounds; so you almost certainly won't want to hand-hold it.

218 miles per hour

With every pull-down at 300 frames per second, the film accelerates to a speed of 218 miles per hour and then stops again. The W12 uses 8 claws (4 a side) and 2 register-pins.



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Letters

Union Response

Local 659 would like to thank Steve Poster, ASC, Local 659 director of photography, for writing the thought-provoking editorial "Tough Love: A Union Member's Plea for Reform." Since appearing in the May issue of *AC*, Brother Poster's article has been a lightning rod for discussion as to which direction the IATSE and camera locals should take into the 21st Century.

Not only does Local 659 agree with the main points of "Tough Love," but its newsletter has articulated many of the same themes:

1. Local 659 fully agrees with Brother Poster when he says "the first tenet of trade unionism is to organize." We also agree that one of the main obstacles to organizing has been the closed and "protectionist" attitude of some locals, who continue to take an antagonistic attitude to their non-union competition.

What is needed at this point is nothing less than a nationwide strategic plan for organizing. The first part of any such plan would be to analyze the industry to determine exactly why some production companies choose to go non-IA. The second part would target the most intransigent non-IA producers and delineate exactly which tactics would be used most effectively against them in organizing campaigns, e.g., strikes, publicity, corporate campaigns, et cetera. Simultaneously, the IA should conduct a full-scale educational campaign for leaders and members on the necessity of organizing the unorganized. As Local 659 stated in its October 1993 newsletter, "Unions do not gain control of an industry merely by being reasonable with employers . . . They do it by organizing people and motivating and mobilizing them into joining a campaign against further wage-slashing and competition among craftspeople. They do it by taking away the employers' non-union alternatives." Local 659 thus agrees with Poster: the first target for an organizing campaign is the IA itself.

2. Local 659 also believes Brother Poster is right when he says "there must be a true flexible scale tailored to fit every type of production, and we have to be willing to make deals and even change some of our standards" in order to regain lost work. Local 659 has been making the same argument for years. Although this flexible approach can work only in the context of an overall organizing plan, we'd have to be fools not to realize that we are competing for work in the context of a world economy. Every IA member should be concerned when lower-budget producers such as Showtime, HBO, etc., don't believe the Hollywood IA is capable of entering into low-budget contracts similar to those they have with the DGA, SAG or the New York City IA's East Coast Council. Put simply, even if the IA was able to mount the greatest organizing campaign in labor history, low-budget producers would not sign the full Basic Agreement. This is why Local 659 has strongly supported contracts with *Baywatch*, movie of the week producers, and low-budget feature producers such as Propaganda Films. Brother Poster is right: the IA should aggressively seek out low-budget work.

3. However, Local 659 does not agree with Brother Poster that by *eliminating* the roster the IA and Local 659 will immediately solve our problems. First, the idea of getting on the roster is one of the best organizing tools we have at our disposal. Because non-IA workers usually want to get on the roster, they are more willing to give the union help in organizing. Second, in 1989 Local 659's members voted by a 10 to 1 margin to radically modify our roster. Consequently, Local 659's roster no longer excludes camerapeople who work in our jurisdiction. We have nearly dried up the non-union labor pool of operators, assistants and still photographers. Accordingly, Local 659 believes that if other Hollywood locals would modify their rosters as the editors, sound and camera locals have done, the Hollywood bargaining unit would be taking a huge step to-

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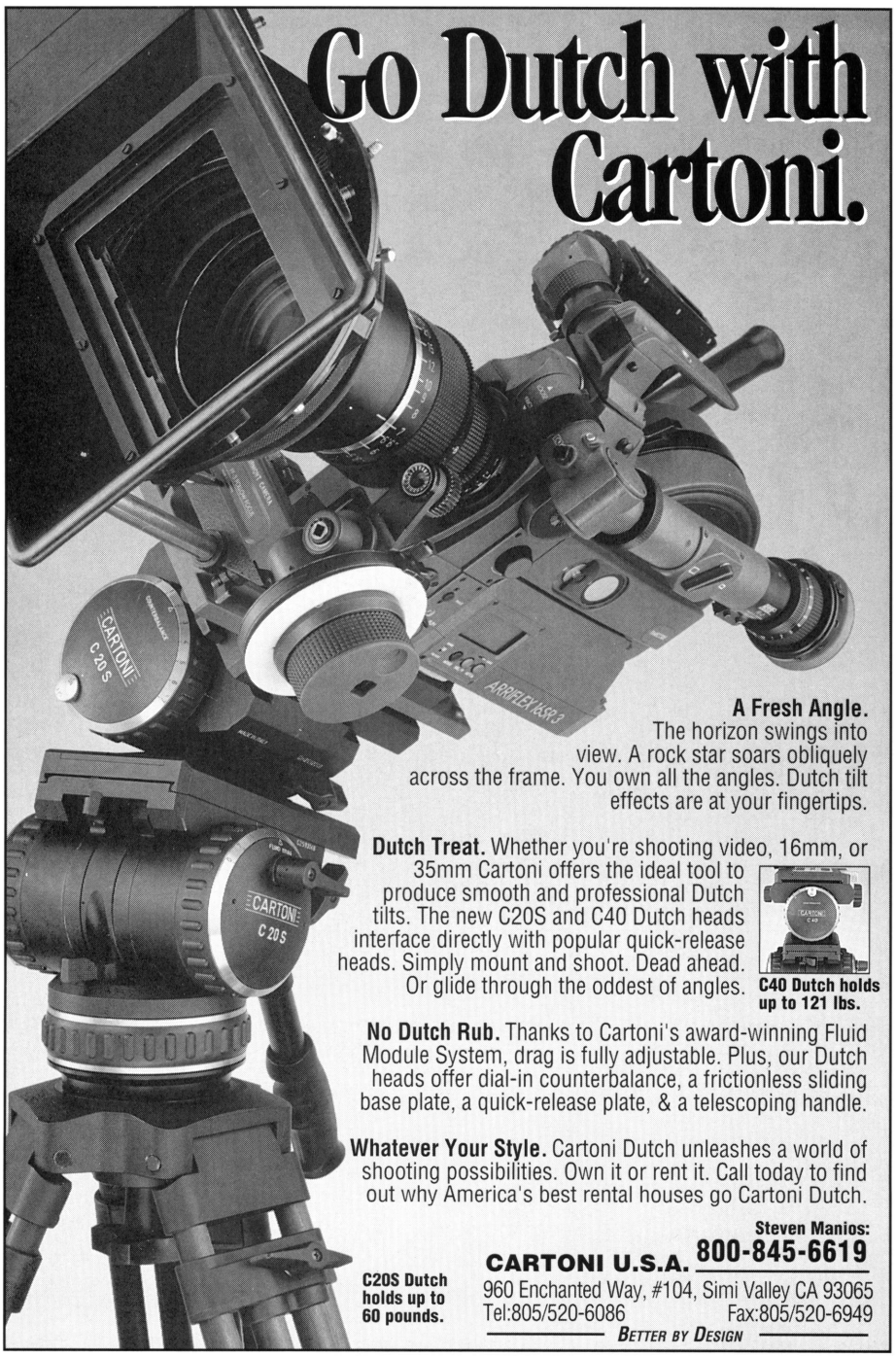
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ward eliminating non-union competition and, at the same time, using the roster as an organizing tool.

4. Local 659 is also more hopeful than Brother Poster about working with above-the-line guilds to help stop the attack on our working conditions. Brother Poster blasted the DGA, SAG and WGA for "giving lip service to solidarity." Although this has been true in the past, the *Harts of the West* strike proved conclusively that when the IA has the support of crew members, sympathetic actors and even SAG itself will support our battles. If we understand that above-the-line guilds are usually working under collective bargaining agreements which they cannot legally violate, we should know that they cannot walk out in solidarity merely because the IA is striking. Having said this, however, many big-name actors, directors and writers are willing to help the IA publicize its struggles. We need to organize these supporters into a working alliance for better conditions.

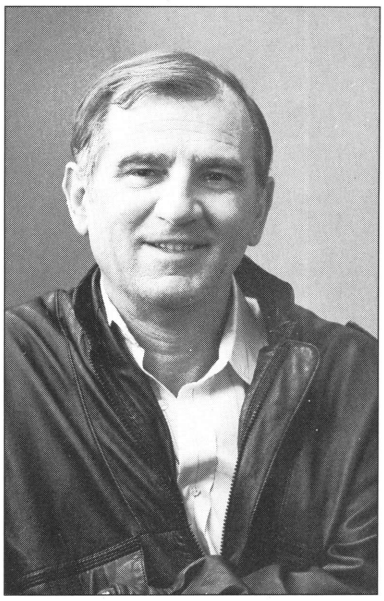
5. Local 659 agrees with Brother Poster that "we must try to end the little fiefdoms of locals all over the country fighting amongst themselves." In our opinion, the first step towards a national union is a merger of the camera locals. What better way to establish national conditions and, at the same time, to eliminate the producers' non-IA options? If, as Brother Poster says, "the purpose of a union is to act as a collective bargaining agent for all of us," then it is imperative that a camera local have the power to represent camera craftspeople throughout the country.

It is time for below-the-line workers to take the offensive, expand our rights and improve our conditions. Thanks to Brother Poster for showing us the way.

— Bruce Doering,
Executive Director,
International
Photographers Guild
of the Motion Picture
and Television Industries
Local 659 IATSE

AC welcomes our readers' thoughts and suggestions on this issue. Please write us in care of Letters to the Editor at P.O. Box 2230, Hollywood, CA 90078, or FAX us at (213) 876-4973.

"In its zoom range, it's the sharpest we've tested. And the quality control means we don't have to select the ones we buy."



Otto Nemenz is the President of Otto Nemenz International

Otto Nemenz on the Cooke 18-100mm T3

"We stock all the wide-angle zooms, so people can choose," says Otto Nemenz, "But we have three times as many of the Cooke 18 to 100s."

"The Cooke is the best of them, particularly at the wide end, which I feel is the most important—that's where you're trying to record the most detailed information. And that's where distortion shows up."

"In that zoom range, it's the sharpest lens we've ever tested. It's also very quiet—no noise radiation. The Cooke 20 to 100 used to be the sharpest in that range. The 18 to 100 is slightly better; and the difference between 20mm and 18mm is significant."

"This Cooke is also the shortest and lightest in its zoom range. And more of its weight is back near the mount, so it's easier to balance the camera. Color matching is good with Zeiss hard lenses."

"Lens maintenance is not a big issue. Quality control at the factory is another matter. With some makes, you can take a batch of new lenses and their optical quality will vary between 70% and 100% (with 100% being the best)."

Cooke zoom lens system

At far left: 25-250mm Cinetal T3.7. At near left: 18-100mm T3. On both lenses, the maximum T stop holds true for entire zoom range.

"On the other hand, the Cookes we've tested have all measured between 95% and 100%," says Mr. Nemenz, "So we don't have to select the ones we buy. They're consistent."

Cooke

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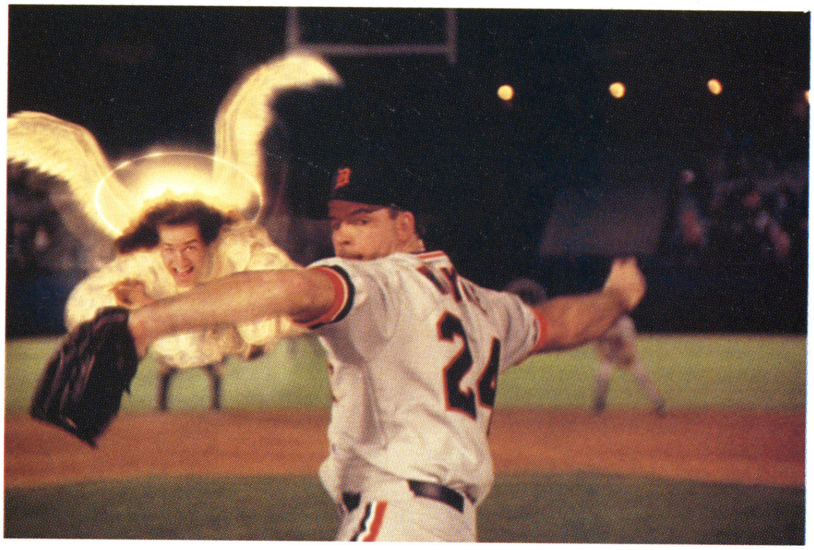
Surveying the Postproduction Scene

compiled by Marji Rhea and Stephen Pizzello



***PDI's spirits from the beyond insinuate themselves into a ballgame in* Angels in the Outfield.**

PDI

When film director William Dear needed otherworldly spirits for his Touchstone Pictures release *Angels in the Outfield*, he called upon the Hollywood visual effects studio Pacific Data Images, whose experience creating ghosts for *Heart & Souls* and baseball effects for both *The Babe* and *Rookie of the Year* made them ideally qualified for the task.

For *Angels in the Outfield*, which focuses on a team of little leaguers aided by a band of pinchhitting angels, the director wanted a non-traditional look that would make the angels appear both ethereal and humorously human. To achieve this look, PDI came up with a combination of live action and computer-generated effects for 20 different shots of angels. Some required fully computer-animated characters, while others involved adding elements such as computer-generated wings to live actors. Although these live actors were shot against greenscreen, PDI avoided the time-consuming process of motion-control photography by using proprietary motion-tracking and image-manipulation tools. The studio's proprietary software also enabled PDI to create realistic looking hair, faces, cloth, clouds and mist.

A variety of visual effects were also applied to lead actor Christopher Lloyd. Using several digital techniques, PDI made Lloyd appear to be walking through other people, splashing out of a cup of Coke, turning into a bubble, and disappearing into a cloud of pixie dust. Finally, PDI's wire-removal techniques and computer-generated baseballs were also employed to enhance the baseball action of the film.

For information: Pacific Data Images, 1111 Karstad Drive, Sunnyvale, CA 94089, (408) 745-6755, FAX (408) 745-6746.

National and MTV

National Video Center has posted the show open, dream sequences, radio promos and an in-theater trailer for MTV's new science-fiction series *Dead at 21*, about a government experiment designed to enhance human intelligence by implanting a microchip in infants' brains. The chip, however, induces hallucinogenic dreams and kills the participants by age 21. National's sound wizard Doug Di Franco sound-designed and mixed the audio for the show open and the radio campaign, while National senior editor Chris Hengeveld edited the show open, the in-theater trailer and several dream sequences. For the show open, dream sequences, trailer and radio campaign, MTV's Robert Jason was producer/director.

Working closely with Jason, Hengeveld edited and produced effects for the dream sequences. Extensive use of the title camera and additional effects — such as making black & white prints of each frame, drawing on them and reshooting them for stop-motion animation — blended with computer animation to create the right cybernetic "electric warp" look.

The audio designed by Di Franco created, in Jason's assessment, "an ominous and artificial landscape." Di Franco had the freedom to create the sound design from his imagination, basing the style on the visuals of the script; he took sounds and fed them back on themselves to create eerie audio hybrids.

For information: National Video Center, 460 W. 42nd St., New York, NY 10036, (212) 279-2000.

Post Group

The Post Group has launched a new division, the Digital Film Group, that will provide digital film opticals for motion pictures. Digital Film Group offers the Kodak Cineon Digital Film System and includes the Kodak Genesis Scanner and Cineon workstation, and offers Parallax' Advance digital compositing

FUJIFILM I&I
Imaging Information

Photo: Bob Akester

Recent credits: "The Lotus Eaters", "Arctic Blue", "Exquisite Tenderness"

Tom Burstyn on the Fujicolor F-series.

Making movies is hard work. Everything changes: The weather, the shooting schedule, the director's mind. In this raging sea of confusion there are only two things that I have come to depend on: The crew, my friends who have stood by me through the years... and Fuji Film.

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Tom Burstyn C.S.C.,
Director of Photography

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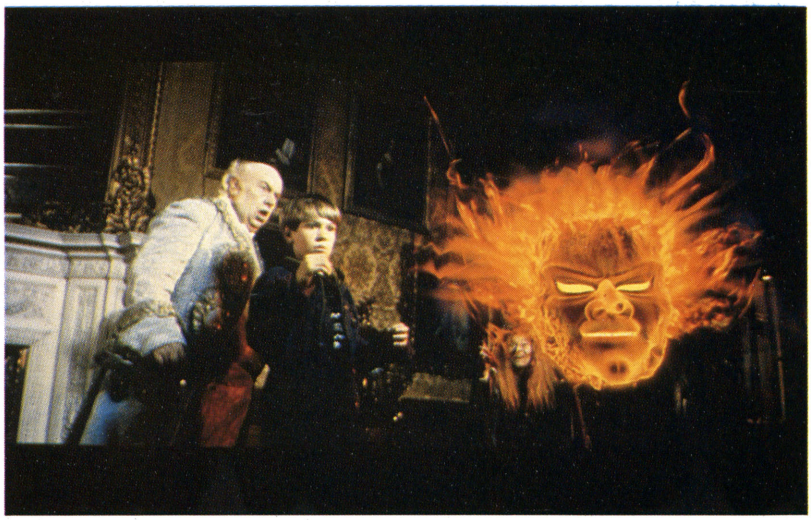

***A witch blows her stack courtesy of Mr. Film in* Haunts of the Olde Country.**

system which complements the existing Matador paint system already in place at The Post Group. These systems run using a combination of Indigo II Onyx supercomputers and Indys.

For information: The Post Group, 6335 Homewood Avenue, Los Angeles, CA 90028, (213) 462-2300, FAX (213) 462-0836.

Mr. Film

Mr. Film recently collaborated with Concord New Horizon and Neue Constantin Films Productions on *Fantastic Four*, a feature-length movie based on the famous comic published by Marvel. Traditional motion picture could not reproduce the complex transformations of the Fantastic Four, characters who lend themselves to extraordinary visual manipulations. In the sequence created by Mr. Film, Johnny Storm transforms himself into the Human Torch, a flaming superhero who soars across the universe to fight Dr. Doom's laser. The segment allowed the company to fully exploit their latest virtual reality animation technique, which renders real-time animation of 3-D characters in a virtual reality environment. Mr Film used magnetic systems that employ six dimensional motion sensors placed on the actor's body; the actors wear a special body suit and perform on a bluescreen stage. The virtual reality background is loaded into the computer so that the actors and the director can see the performance in relation to the digital scene.

Mr. Film was one of the first to demonstrate real-time animation of cartoon characters using sensor technology; at Siggraph '91 they demonstrated a dual sensor system that allowed attendees and spectators to choreograph "Silver Suzy," a computer-generated character, "surfing" through a star field. This prototype was further developed into a full-functioning magnetic body suit that was later used for the *Dr. Scratch* and *Fantastic Four* projects. Johnny Storm became a showpiece for body deformation utilizing Kinemation, and his fire effect was generated with a combination of Pixar's Renderman and Wavefront's Dynamation.

Also created by Mr. Film was a segment for the "Witch's Spell" segment of the Imax 3-D, double 70mm film *Haunts of the Olde Country*. Digital composite and digital transfer were used to open the way into the film's 3-D digital theater for the attraction, created for Iwerks and Busch Gardens at Williamsburg, Virginia. In that segment, a little boy mistakenly interrupts a witch at work; she loses her temper and transforms him into a dog. The enraged face of the witch turns into a fireball that rushes into the audience and explodes.

For information: Mr. Film, 228 Main St., #12, Venice, CA 90291, (310) 396-01467, FAX (310) 396-5061.

Post Effects

"Computer," a spot made by Post Effects for Roadmaster's Harley-Davidson bicycles, and created primarily in the postproduction process, features SGI 3-D animation and switcher effects. In the spot a boy is working on creating the perfect bicycle on his personal computer when he is sucked into the computer monitor, where he is met by two friends and three appropriately-sized Harley-Davidson bicycles. In this computer-generated world, they ride their Harleys until they are sent back through the computer into the child's bedroom, Harleys and all.

This animated spot is unique in that it places live action within a 3-D environment. The boys were placed into an environment that was entirely computer-generated. 3-D animator Bridget Gaynor used the Onyx machine to render the images for the fantasy environment. "Making the images surreal while keeping the motion realistic was the hardest part of the project," she says. "I developed ice caves and vibrant volcano-ridden landscapes that scrolled quickly to simulate the movement and speed of the boys riding their bikes through these environments. The scrolling was key in making the motion believable. According to SPFX director Don Hoeg, "the use of a computer-generated environment allowed us to free the kids from the restrictions of the real world while letting us carefully control every aspect of the spot."

The special effects process was completed in two weeks. "Computer" will begin airing nationally September 26th.

For information: Post Effects, 400 W. Erie, Chicago, IL 60610, (312) 944-1690.

The Loft

The Loft/Filmsmith recently completed three commercials for Leo Burnett, Columbiana. The client, Postobon soda, wanted three spots in which the action continuously and seamlessly repeated. The first commercial, "Playa," shot in Key Biscayne, Florida, had two distinct versions, each featuring a dolly shot that was more than 140 feet long and covered a volleyball game, three windsurfers, a dog, several children, a couple on an all-terrain vehicle, a girl in a Corvette, dozens of seagulls, and extras. Since the elements involved were to be digitally composited into a seamless loop, timing was critical. Director of photography Pat Longman filmed the shot using a 28mm lens on an Arriflex camera.

For the second commercial, "Montana," filmed at Tropical Park in Miami, a remote-head Enlouva Crane was used to match some previously shot Steadicam footage from Telluride, Colorado. This shot involved two dirt bikes,

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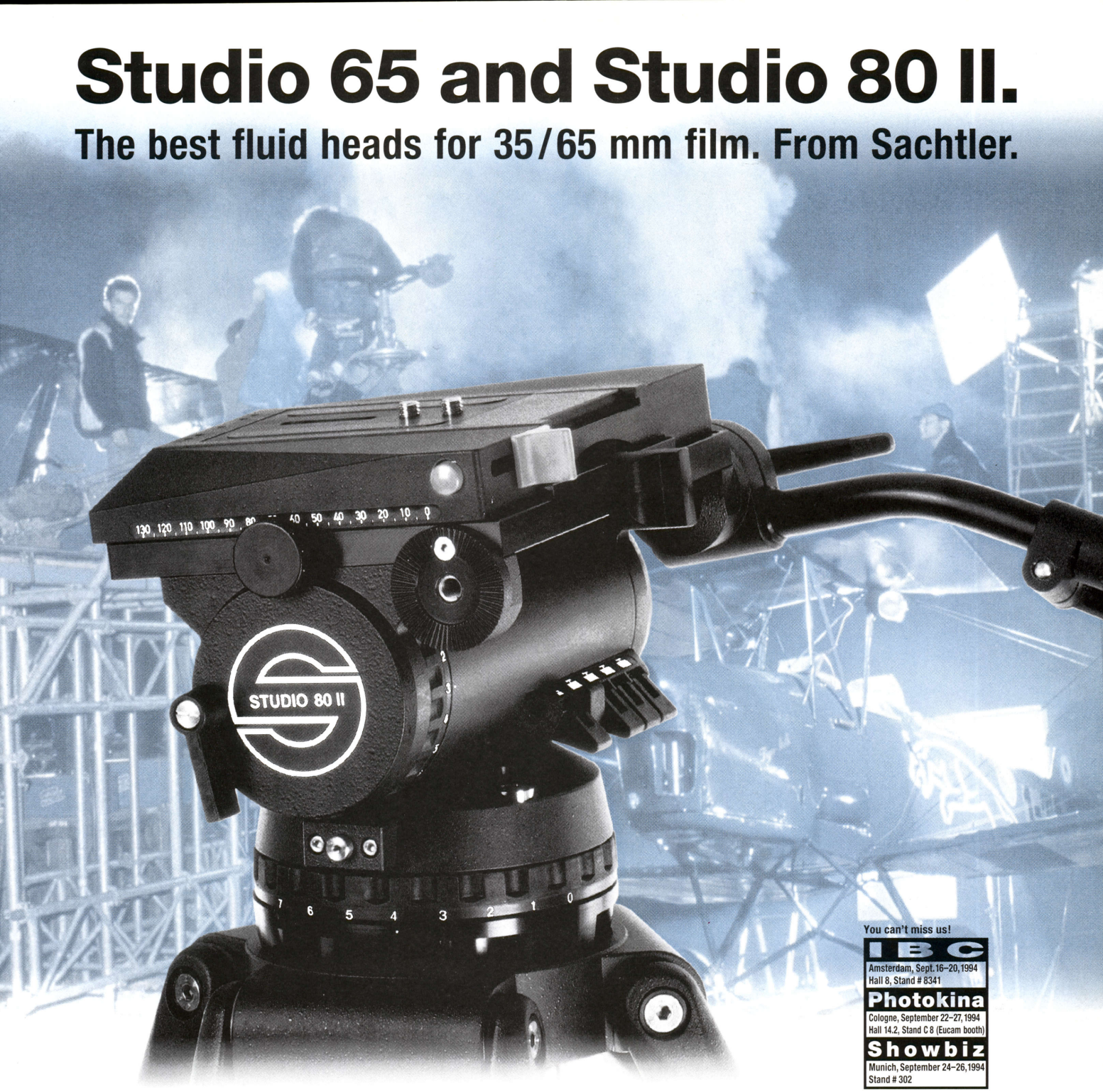

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Munich, September 24–26, 1994
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dozens of extras, a mountain climber and more. Again, timing was critical in order to match the Steadicam footage.

The elements from each commercial were then taken to The Loft and were offlined on an Avid Media Composer 8000. The parameters to create the seamless video loop for Playa-Sunset were figured out quickly, and the 95-frame custom wipe was created by Paintbox artist Dave Woodward at Edefx. "Playa — Sol" and "Montana" were onlined by Bob Roesler and retouched by Tom Malaro.

"When the concept of a video loop was presented to me," says Norman Smith, veteran director/editor, "we all figured it would be a project out of the client's reach. But after a little research and a simple test, we decided to go for it and pull it off. Laying it all out on the Avid saved us thousands in the final post."

Smith's credits include music videos for the Rolling Stones, Cyndi Lauper, and Bon Jovi; various Saturday Night Live skits; commercials, sporting shows, and feature film work with Robert Altman.

For information: The Loft/Filmsmith, (305) 442-7266, FAX (305) 442-7249.

Century III

Promos for the cartoon series *Valley of the Dinosaurs* and *Plastic Man* were recently produced at Century III at Universal Studios Florida. Working with independent producer Karim Miteff for Turner Broadcasting's The Cartoon Network, Century III's graphics, editing, and audio departments brought the dynamic animated spots to life.

Key frames from each of the two series were captured on the Abekas A62 digital disk recorder and used to create custom paintbox cels. Editor Oliver Peters composited all elements over original backgrounds and edited the final 30- and 15-second promos to D-2, using the Grass Valley Group Kaleidoscope and its Kurl effects extensively in the animation process.

Century III also recently teamed with Guastella Films and Puerto Rico ad agency Foote, Cone & Belding Communications to produce a commercial campaign for Technics, who are introducing their Home Theater System. In the commercial, the television's screen suddenly illuminates with action scenes from the movie *Earthquake*. As the Home Theater System's sound kicks in, the whole picture starts shaking violently to match the movie footage.

Colorist Bob Schmidt performed pin-registered transfer of camera original 35mm film on Century III's Rank Mark III with daVinci Color Correction and the Steadi-Film II system. The picture inserts were composited on the DFX Composition graphics workstation. Oliver Peters handled all online editing, including creating the earthquake effects using the Grass Valley Group Kaleidoscope. Dana Meeks created an elaborate sound design to match *Earthquake*'s thrilling Sensurround soundtrack.

For information: Century III at Universal Studios, 2000 Universal Studios Plaza, (407) 354-1000, FAX (407) 352-8662.

Kunert/Manes Opens Doors

The Kunert/Manes Company, a unique postproduction facility offering competitive rates, recently opened for business in Hollywood. Located in a two-story home that features a garden, barbecue area and bar, Kunert/Manes is a "post house" that lives up to the phrase.

In addition to comfortable, spacious surroundings and very flexible hourly rates, the facility offers 24-hour access to the latest post technology. Its nonlinear editing options include 3/4-inch, S-VHS, BetaSP and Hi-8 importing, as well as DAT and optical drives, up to eight hours of video storage, and the ability to ouput all major video EDLs and film KeyCode lists. At the client's request, the company supplies operators and editors. Kunert/Manes also handles computer graphics (3-D animation, titling, morphing, wire-removal, digital composites and specialized wipes) and digital postproduction sound (including foley, ADR, music and location recording).

For more information: The Kunert/Manes Company, 326 N. Fuller Avenue, Los Angeles, CA 90036, (213) 933-6200, FAX (213) 933-7311.

Tape House Digital

The Tape House's newest division, Tape House Digital Film, has opened under the direction of software developer David Kuttner and offers a variety of services, the primary one be-

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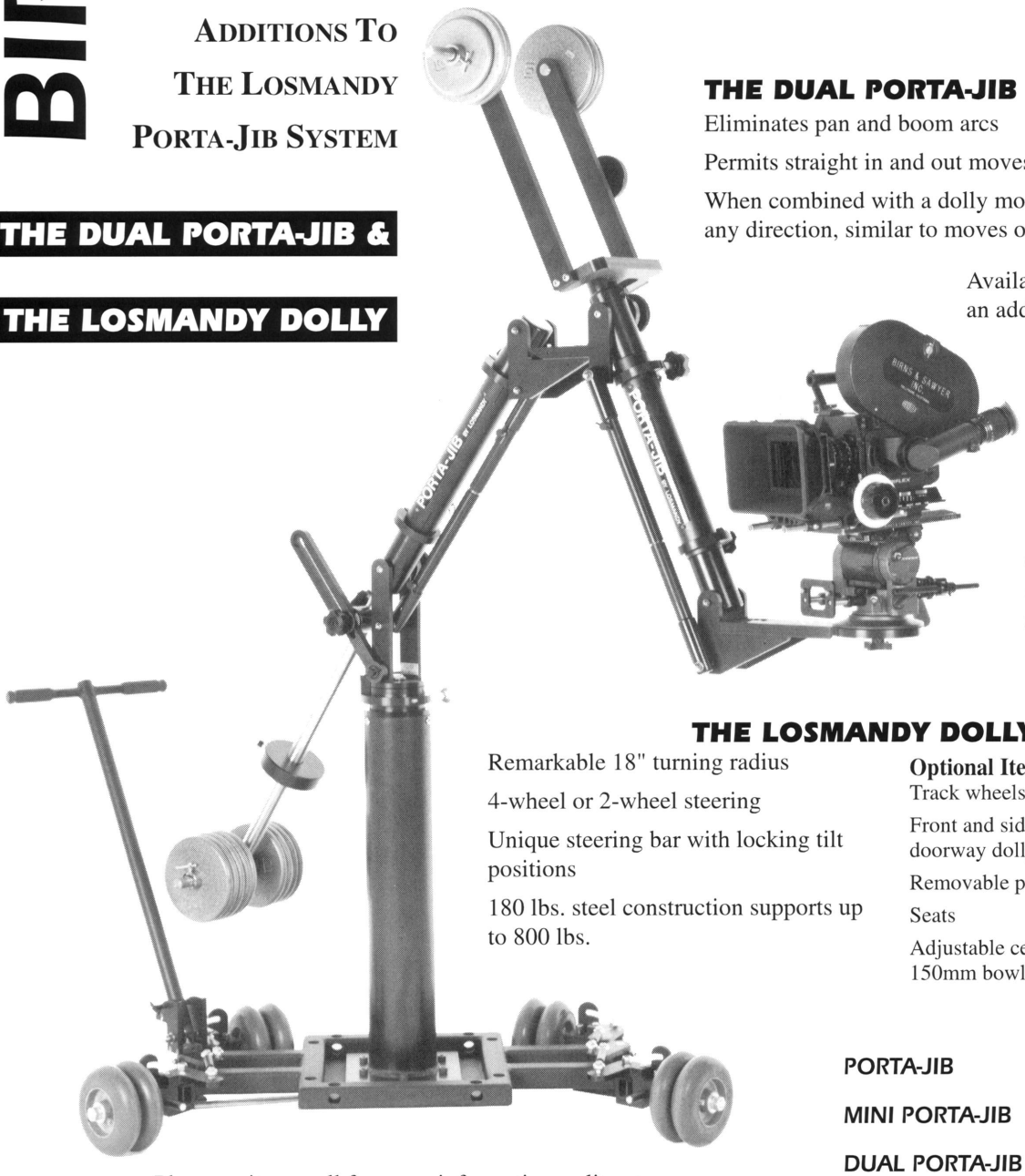

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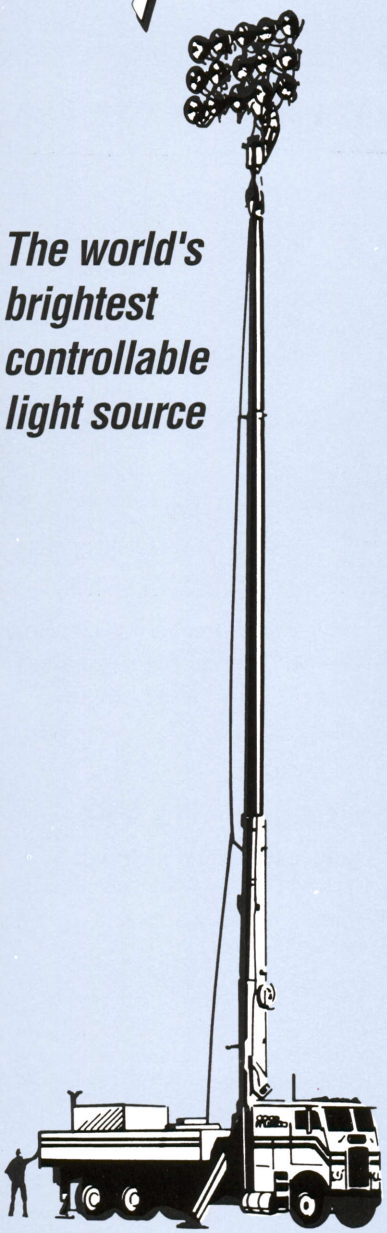
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ing video-to-film transfers. Using specialized software and the Solitaire Cine II film recorder, Tape House Digital Film can take video resolution (preferably D-1), interpolate the images to 2K (2,000-line resolution) and output cinema quality 35mm motion picture film, even Kodak 5245. In addition to being able to output motion picture film, the service can also provide 4X5 and 35mm transparencies of up to 8K.

The new division has the capability to transfer images created on virtually any computer platform or video format to film and to scale to various resolutions. The facility supports virtually all video formats as well as all computer formats.

The Tape House recently expanded its New York location to make room for the company's new nonlinear offline editing services, which they will launch with an Avid system for long-form projects. The company's fourth telecine is expected to be an Ursa Gold, for film-to-tape transfer and the company's first step toward a resolution-independent postproduction environment.

For information: Tape House, 216 E. 45th Street, 2nd Floor, NY, NY 10017, (212) 557-4949.

Pacific Title Art & Studio

Pacific Title Art & Studio's new digital division, Pacific Title Digital, offers digital compositing and brings together three primary postproduction disciplines — optical effects, special effects and computer graphics. The company has developed its own proprietary hardware and software, to be utilized with the IBM Power Visualization Server (PVS), Silicon Graphics Onyx System and Recognition Concepts Disk Array.

For information: Pacific Title Digital, (213) 938-8553.

Varitel Video

Varitel Video recently used some thoroughly modern special effects techniques to bring ancient history to life in posting eleven episodes of the Arts & Entertainment Network series *Mysteries of the Bible*. A team of editors and digital effects specialists from the facility created a variety of special visuals for the series, including an animated timeline that helps viewers place well-known biblical stories into historical perspective.

Produced for A&E by FilmRoos, *Mysteries of the Bible* explores the authenticity of various biblical accounts, comparing religious tradition with scientific fact. One episode, for example, examines archaeological, theological and scholarly evidence surrounding the story of Joshua and the battle of Jericho to discover if, when and how the walls came tumbling down.

To develop interesting visuals to tell the story, Varitel Video digital graphics artists Greg Rainoff used a Quantel Harry/PaintBox system to create a number of animations that supply important information while providing the show with an added visual dimension. These include colorful maps of the Holy Land and the animated timelines. Varitel Video online editor Ned Weisman used a Kaleidoscope to incorporate flat art works into the shows, including scores of paintings depicting historical events. Each episode featured from 300 to 500 individual pieces of art. All of this effects work took place in a postproduction schedule that was brief and frequently changing. FilmRoos had just a week to post each episode and its productions were often complicated by the tangled custom regulations and politics of the Middle East.

For information: Varitel Video, 3575 Cahuenga Blvd. West, Los Angeles, CA 90068, (213) 850-1165.

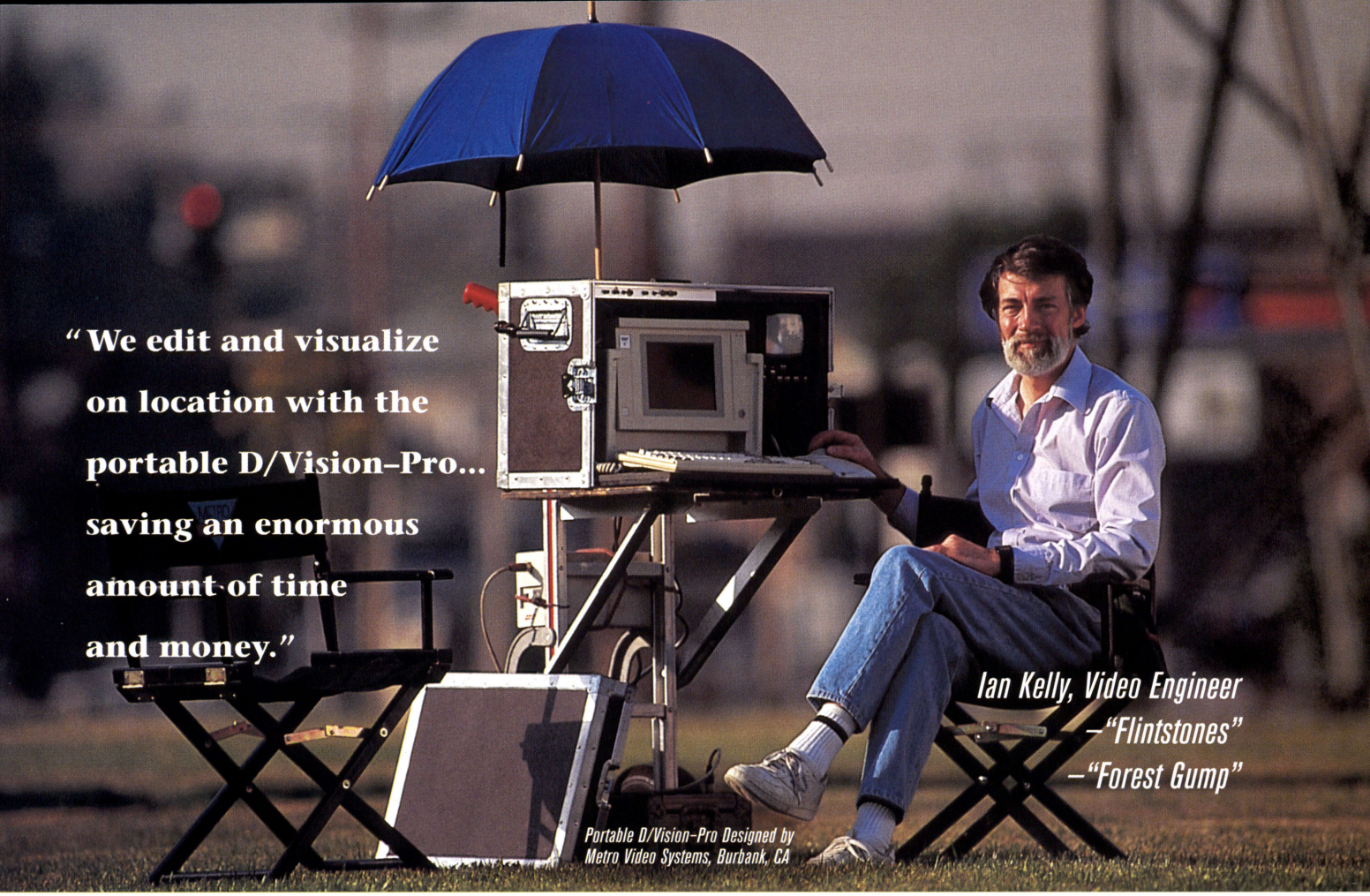
Upcoming Events

September 9, Deadline for entries: 19th Annual Banff Festival of Mountain Films, Banff, Alberta, Canada. For information: (403) 762-6125, FAX (403) 762-6277

September 9-11 (Los Angeles) and September 30-October 2 (New York): Robert Bordiga's Nuts & Bolts Production Seminar, Los Angeles. For information: On-Budget Features, 163 Amsterdam Ave., Suite 315, New York, NY 10023, (800) 755-PROD.

September 9-13: Monty Python: Lust for Glory! Celebrating 25 years of Monty Python, American Cinematheque at the Directors Guild Theater, Hollywood. For information: (213) 466-FILM.

September 13-16: Seybold San Francisco Conference & Exposition showcasing the latest breakthroughs in publishing, graphics and communication. For information: ZD Expos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James Kellahin, Producer/Director
-Kellahin Productions (Resident production company at Warner Bros.)

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Dan Molina, Film Editor
-Turner Feature Animation (Feature division of Hanna Barbera)

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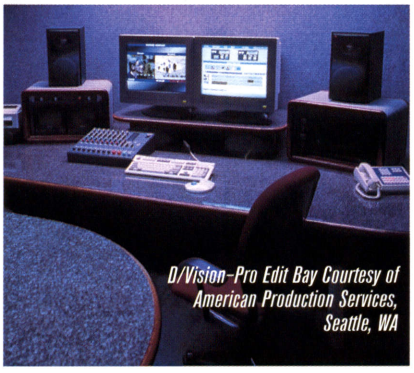
Mark Moscowitz, Owner
-Point of View Productions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Deadline for entries September 20: ITVS call for proposals for interstitial material for public television children's programs. For information: Independent Television Service, 190 Fifth Street East, Suite 200, Saint Paul, MN 55101.

September 22-27: Photokina Professional Media, with ICIA Pavilion, Infocomm Video Projection Shoot-out and Infocomm War of the Walls, Cologne, Germany. For information: Kirsten Young, Infocomm, (703) 273-7200, FAX (703) 278-8082.

September 24-26: ShowBiz Expo Europe, Munich, Germany. For information: (714) 513-8400, FAX (714) 513-8481.

September 30-October 2: Salute to Britain's Channel 4, American Cinematheque at the Directors Guild Theater, Hollywood. For information: (213) 466-FILM.

October 6-16: Mill Valley Film Festival, Mill Valley, California. For information: (415) 383-5256, FAX (415) 383-8606.

October 7-16: 11th Annual Chicago International Children's Film Festival. For information: (312) 281-9075.

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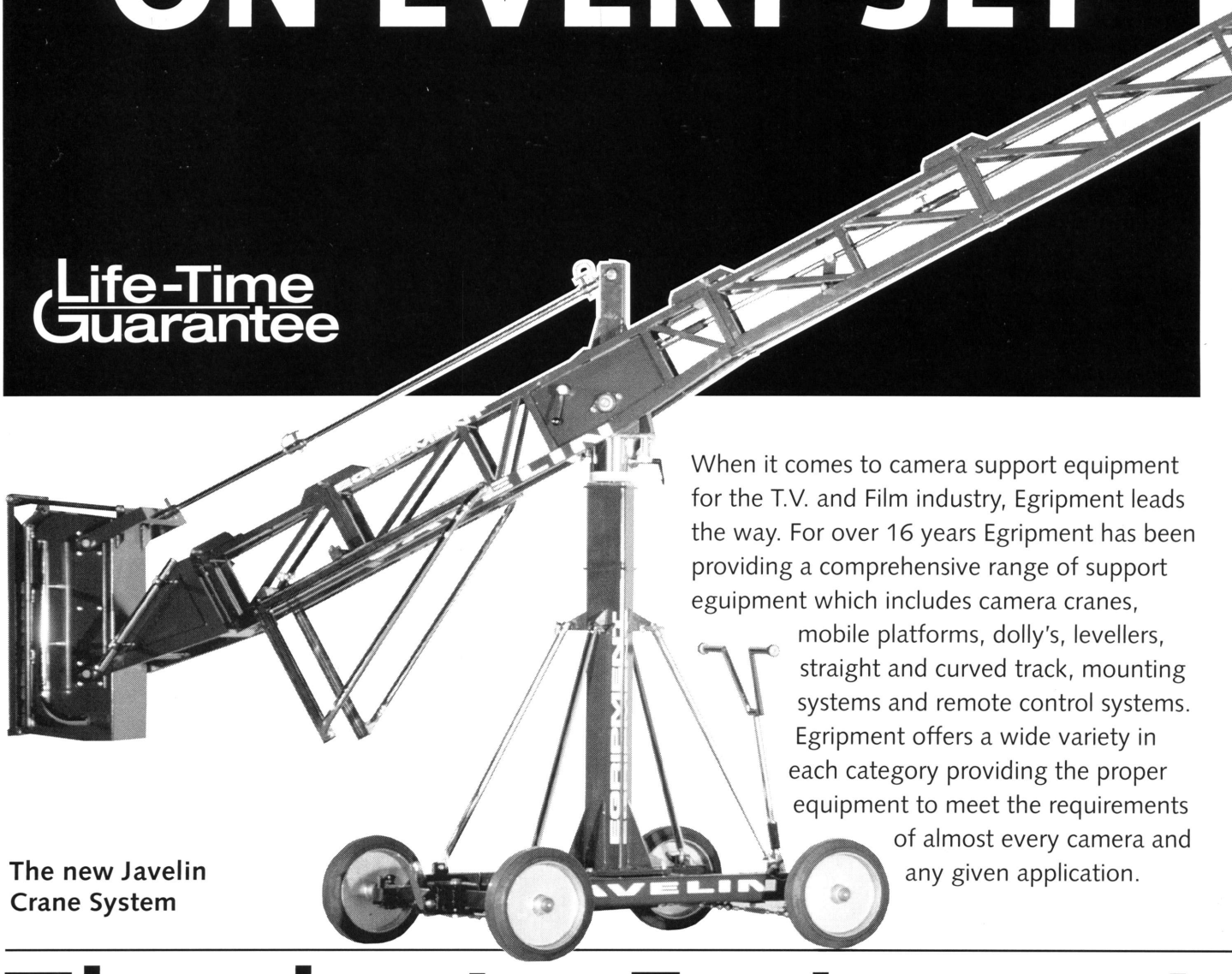

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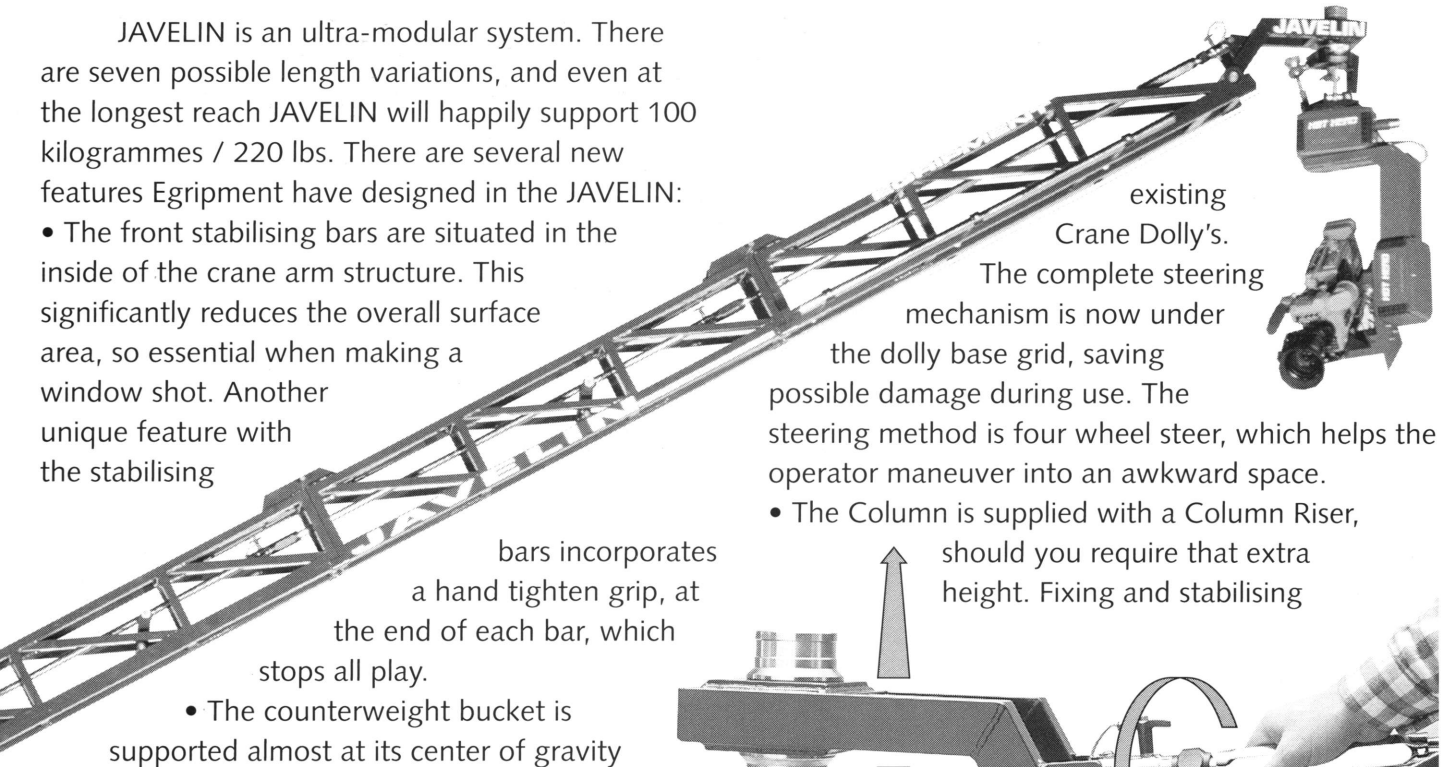

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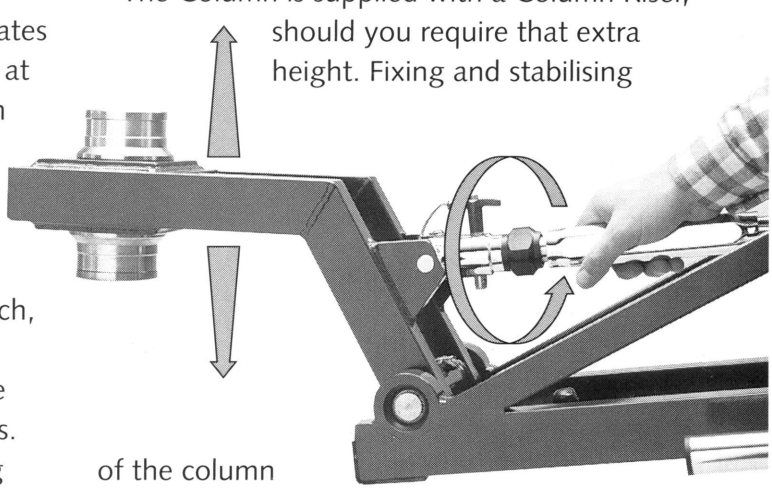

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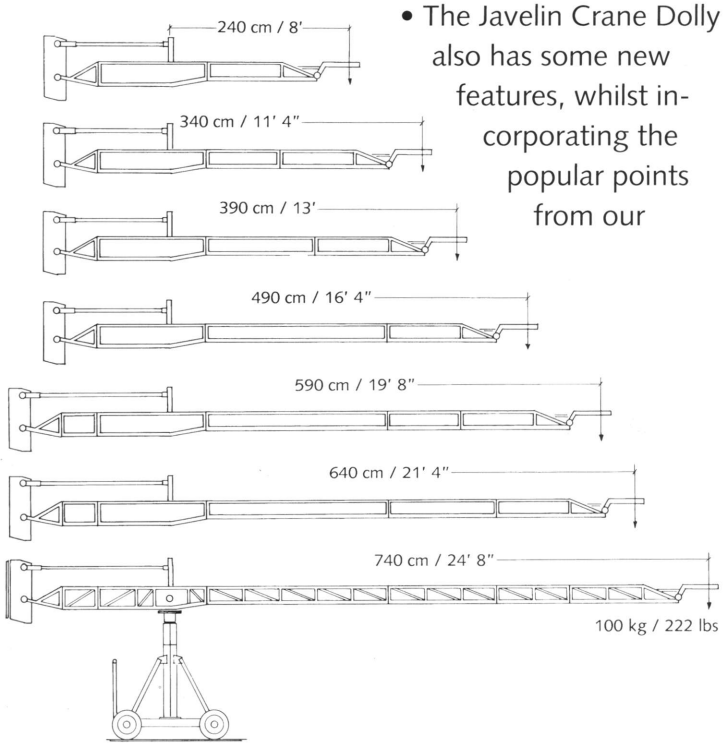

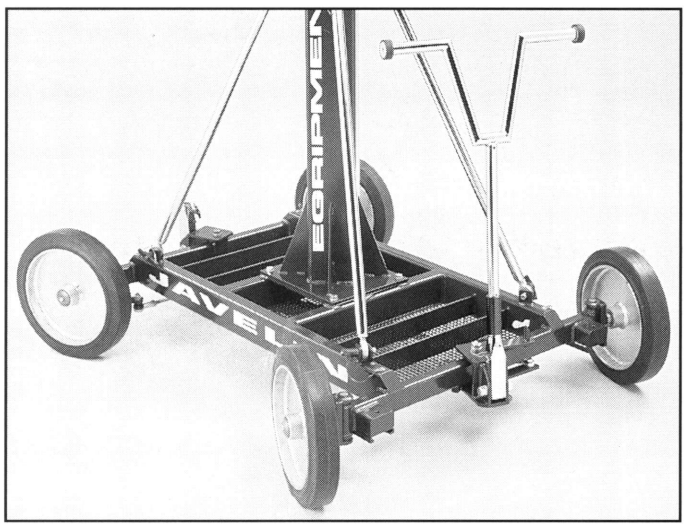

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Choosing the Proper Tools: A Primer

Selecting the correct camera, grip and electrical equipment can save a production both time and money.

by Debra Kaufman, as told by Stephen Burum, ASC

In the July issue, Stephen Burum reminded us of some of the cinematographer's other *duties — duties not normally recounted in these pages but essential to the success of a film nonetheless. The following article is the second installment in what will be an occasional series examining the thousands of more prosaic, yet crucial decisions a good cinematographer makes every day.*

—Editor

In the beginning days of Hollywood, the director was often an actor out of the company. That's how D.W. Griffith and Cecil B. DeMille got started. Since that time, the director's job has been to protect the arc of the storyline, to oversee the pacing and staging of the story, and to coax or romance the best performance out of the actors. The cinematographer's job has been to visualize and display the story and the actors' performances, so they are shown in a visually interesting manner.

Some directors also came from a writing background, with the ability to rewrite dialogue on the set — Howard Hawks, for example. Shakespeare is a great example of the writer-director. Imagine that Shakespeare had written a book and Leonardo daVinci provided the illustrations — in the film world, their roles would be paralleled by the director and the cinematographer.

That's why ideally the director and cinematographer should have a very, very close relationship. The cinematographer must have a complete knowledge of everything — from all the equipment used, to lighting, gripping, staging, rigging, acting, editing, sound, makeup, wardrobe, props, special effects (mechanical, optical, and electronic), construction and set design.

Because of the way things operate in Hollywood, the director and cinematographer often have an unrealistic budget or schedule foisted upon them. There's the false perception, among artists, that the studio (or the money people) are holding them back. There's a corresponding false perception among producers that the artists are spending their money willy-nilly. The truth is that both sides want to make the best movie they can. But these two groups of people, with the best intentions in the world, sometimes get embroiled in considerable disagreements.

In order to pre-empt some of these clashes, the director and the cinematographer should sit down and come up with a plan from which the studio can develop a budget and a schedule. Making a plan gives everyone a point from which to make a realistic assessment of what's needed to make the film.

For instance, I'm about to start prepping *Matilda* with [director] Danny DeVito. We'll be spending eight weeks in a small room plotting out the picture, shot by shot, effect by effect. We're going to bring in the production designer and figure out how all of this will go together. What will also emerge from these conferences is my approach for choosing the right equipment.

Systems Management

Systems management is the term I use for the cinematographer's overall responsibility on the film with regard to equipment and personnel. The cinematographer has a tremendous responsibility to come up with the right camera, electrical, and grip package tailored to the particular production, and to communicate those equipment needs to the right parties at the proper time so, for example, the producer and production manager can incorporate them into a schedule and a realistic budget.

Equipment choices are partially predicated on how much time and how much money there is, and it's always a trade-off. When you buy equipment, you're buying time because you're solving a mechanical problem that'll enable you to give the actors and director more acting time.

As the only person on the set who is familiar with all the equipment and how it works together, the cinematographer uses this knowledge to make choices that can have far-reaching positive effects for how time and money are used. Ultimately, good systems management on the part of the cinematographer will result in a better picture.

Choosing Camera Equipment

The cinematographer starts by picking a quiet sync camera and any necessary specialized cameras, such as a high-speed or VistaVision camera. The basic camera package usually contains a main camera body (the A-camera) and a set of lenses, usually seven to ten fixed-focal-length lenses and a zoom lens. He also has another camera body

(the B-camera) in case the A-camera breaks down. It's rare, but it happens. If you're in Los Angeles, you can gamble and not have a B-camera, because a back-up camera is usually an hour and a half away. Out of town, it's critical to have a B-camera. In most cases, it should be a duplicate of the A-camera. Then, if something should break off the A-camera, you can scavenge a replacement part off the B-camera and send for a new part, as opposed to a new camera body. This underscores the importance of compatibility for all the equipment on the set.

How many magazines you carry depends to a great extent on how many film stocks you're going to use. If you change film stocks often during the day, you'll want to have extra magazines with the film stock already loaded. I usually use one film stock for a whole picture, so I carry only four 1,000-foot magazines and two 500-foot magazines. This way, if I have to shoot two cameras, I still have a magazine on each camera and a back-up magazine that can be re-loaded while we're shooting.

If possible, it's good to carry both a gear head and a fluid head, because some shots are better done with a gear head and some with a fluid head. This also gives you the ability to shoot two cameras if you have to. I usually only take one set of tripods because I know that I can put one camera on a tripod and one on a dolly.

It all comes down to being versatile, being compatible, and being economical. If you want to shoot two cameras, one can have a zoom lens with the full range of focal lengths, and the other can be covered by the fixed focal-length lenses. With some package configurations, you may want to take two zoom lenses instead of fixed focal-length lenses. But you always want to have the ability to shoot two cameras or the ability to continue shooting the movie if a camera or lens breaks.

When I shot *Casualties of War* in Thailand, I took two sets of anamorphic Panavision fixed focal length lenses and one zoom lens. Why two sets of the fixed focal length lenses? In the tropics, a spiderweb-like fungus starts to grow inside the lenses. We would put the lens in the freezer, take it out, thump it on the side and a powdery dust would fall out. We could dry it out and use it for a little more time, but after a few cycles, a lens would become unusable and had to be sent to California to be cleaned. So it was actually more economical to rent two sets of lenses. Without two sets, we would have been crippled for four or five days, unable to shoot until the lenses got back. In that case, renting two sets of lenses got cheap real fast.

The moral of the story is that the cinematographer has to know the physical situation and what kind of movie he's going to be making — and then he has to make it work. The most important credo is to keep the company shooting, and you do that by tailoring the camera package to the situation.

Choosing Electrical Equipment

The cinematographer should have a detailed knowledge of electricity and lighting, down to the various types of plugs, cables, and accessories. A list of necessary equipment, by name, type and amount, must be supplied to the production manager. So when the production manager goes to an equipment rental house and gets the best deal with the best terms, you'll get the equipment you really want. If you use a generic equipment name on your list, you may get second-tier equipment. For example, if you don't specify the kind of plug you want on the end of a light, you may need a series of adapters to get the plug you want. You may get a good price, but it ultimately means you'll need extra milk crates to put these adapters in, which will take up more room on the truck. You may have gotten it for a cheaper price, but you're losing truck space.

The cinematographer has to know as much about electricity and electrical equipment as the gaffer. For instance, let's say you want to light a building in the background for a night location. You want to choose the method that's going to look the best, be the easiest mechanically, and cost the least amount of money. If you want a dappled light effect, for example, you can do it via a 10K and use a cookie. But a more economical solution is to use five 1K PAR lights, which only draws 50 amps, half the amount of power used with the 10K. It also means your cabling is smaller, and your generator capacity can be less.

> It's the cinematographer's job to communicate to the production people, in a timely fashion, the type and amount of equipment needed to execute the picture.

In a studio, where almost anything is available, you can shift things in and out. But out on location, one must customize one's package. For example, on location, there is usually a 40-foot semi with a trailer and two generators on the tractor. The maximum power that these two generators put out governs the number of lights you're going to take. If the schedule calls for a good deal of night shooting, it's best to either have a "swing" generator (another generator which can be put down the street, away from the two main generators), which cuts down on your cabling. Another option is to "loop" the set by putting the generators together in one central location and running cables to cover the whole set. Alternately, split up the two generators onto different tractors,

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so you won't need to rent a local "swing" generator, which are often much more expensive.

Though the extra cables needed to "loop" the set aren't very bulky, they do weigh a lot and trucks going across the country have a weight limit set by law. To minimize weight on the truck, cinematographers sometimes pick up extra cable where they're going. But, once again, compatibility is very important: when out scouting, check out the local equipment houses and see if the cabling is compatible or if adapters are available.

Choosing the Right Lights

On location, the cinematographer usually get a scaled blueprint from the art department of the location and sets. After physically seeing where shooting will take place, you can figure out which lights are needed. If you're working strictly from the blueprints, you need to mark down on them what lights you want to use, so you must know the characteristics of each kind of light: how much light they put out at a certain distance, and they area they cover at that distance.

For all practical purposes, there are really only two kinds of lights: the fresnel spotlight, which casts a hard shadow (like light from the sun), and the fill or flood light which casts a soft, fuzzy shadow (like that of an overcast day). One option is to rent some fresnel and some flood lights, to have a little bit of each. But anyone who observes nature knows that in order to make the spotlight soft, one does the same thing that nature does with the sun: put a big diffuser between the light and the subject. In the case of the sun, it's a cloud. In the case of lights on a set, you can either bounce the light off of something or project it through a material like sailcloth or silk.

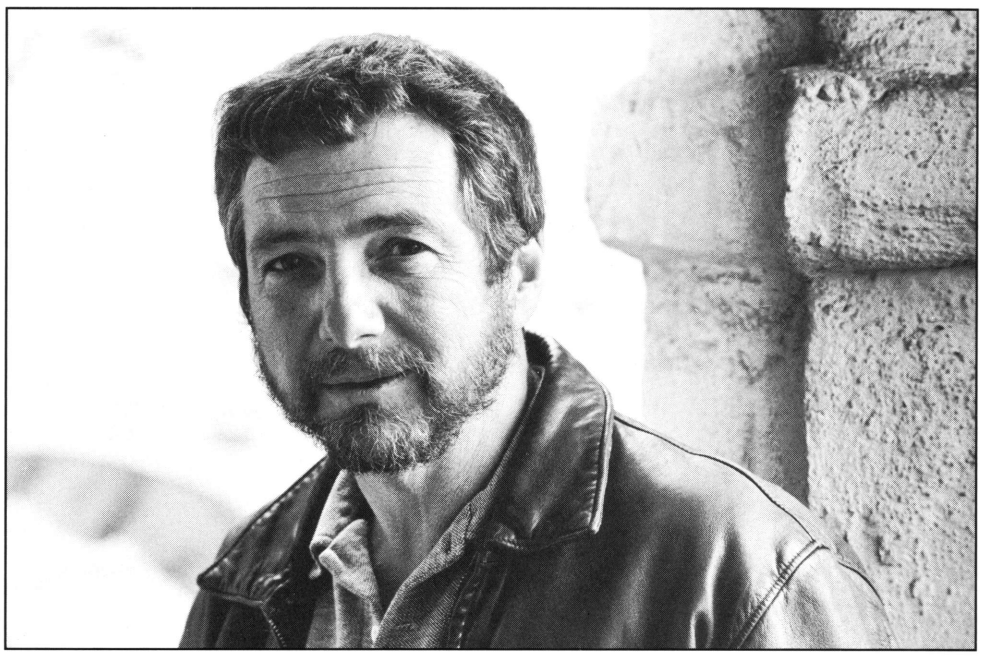
Since soft light can be made with a spotlight, but not vice versa, why carry a bunch of soft lights and a bunch of spotlights? If you have limited room on the truck or a limited budget, it's best to take a bunch of fresnels and modify them to be soft lights, so you have the capacity to make both hard and soft shadows.

Specialized Equipment

As stated earlier, it's the cinematographer's job to communicate to the production people, in a timely fashion, the type and amount of equipment needed to execute the picture. Nowhere is this more clear than with specialized equipment. If you wait until the last day to tell the production people that you need some expensive piece of specialized equipment, it'll be much more expensive than if it had been in the budget from the beginning. For example, suppose you've got a feature film that's going to shoot for 80 days and you want to use a Louma crane on several non-contiguous days. The production manager can say to the rental house, "We're going to guarantee you 20 crane days and these are the dates we're going to need them. Can you give us a deal?" Usually they can. But if your request for the crane is spur of the moment, you'll be paying the full rate.

> As the only person on the set with the big picture of how all the various systems need to integrate, the cinematographer must be knowledgeable about everything from carpentry to lighting.

It's up to the cinematographer to make a list of specialty items with the days or sequences for which they're needed, so the production manager has an overview of equipment needs and has the chance to get the best possible rate. If you don't, you'll have less money to spend on the equip-



Robert Primes' feature and TV credits include Bird On A Wire, The Hard Way, thirtysomething and the pilot for Reasonable Doubts. His commercial credits include Suzuki, Allstate, Honda, Disneyland, Yoplait and MCI

"The Clairmonts have the same attitude I look for in a crew member: *enthusiasm.* Caring more about the images than about the business," says Director of Photography Bob Primes ASC

"I remember calling Clairmont about six years ago and saying: I need to rent about a hundred 6x6 grads and polarizers from you—and nothing else!" says Bob Primes.

Attitude

"We were going to shoot a car spot, using motion-control time-lapse and a custom rotating filter wheel in front of the lens. Filters usually come in sets and with cameras, of course. A hundred of these exotics would take a serious bite out of their inventory. But Terry said: Let's do it—*the shot sounds interesting.*"

What I look for in a crew member

"That's the same attitude I look for in a crew member: caring more about the images than about the business. And that's what I get from the Clairmonts—they seem to be enthusiastic about cinematography."

They supported me from the early days

"They gave me support right from the beginning, when I was far from being an established cameraman. Any custom rig I asked for, they came up with. Not making a lot of money on it. Working on the weekend to get it right."

Part of the team

"That attitude means they're simpatico—I've learned to think of them as a creative part of the camera team. They have the same *values.* It's been true for thirtysomething, for Bird On A Wire and for my TV spots."

They remember a shot years later

"Clairmont is an incredible research bank," says Mr. Primes, "And they're always working on still more innovative things. Years later, both Alan and Denny can remember a shot and how it was done."

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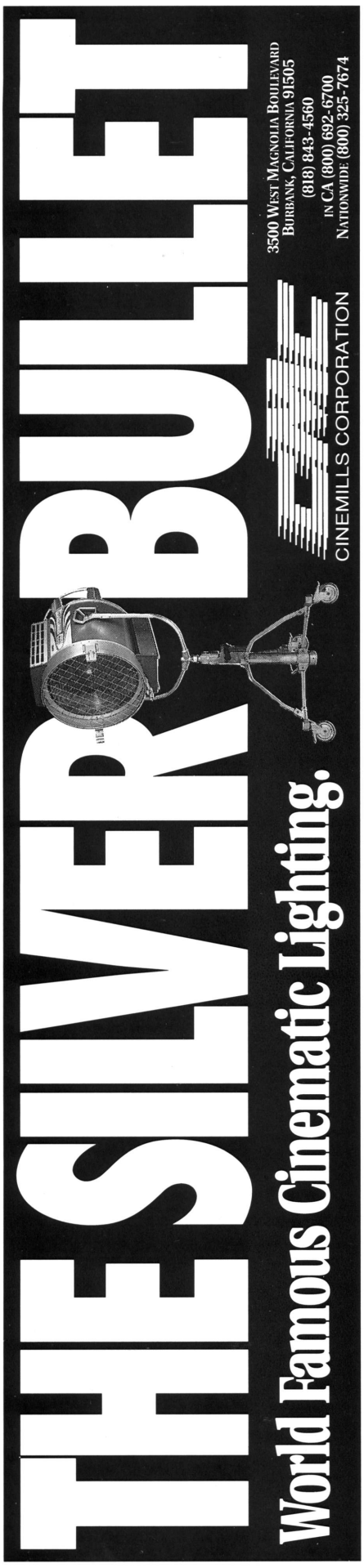

ment you need. And the equipment you want may also not be available the day you want it, so you might not get to use it at all. Also keep in mind that specialized pieces of equipment sometimes need personnel, so it's not just the cost of the equipment but the cost of the personnel to operate it.

Choosing Grip Equipment

What grips do is generally very misunderstood by the layman. They have to know about set construction — how to put it together and take it apart. They need to be master mechanics, and they must know how to rig and gracefully move the cameras. Dolly and crane grips are like camera operators because they move the camera in the shot to the rhythm of the performance. Not only are they on-the-spot inventors and master construction engineers, but interpretive artists. They have to pay attention to the actors and their performance; if the actor changes the pacing in a shot even slightly, it's the dolly grip who has to be sensitive to it and move accordingly.

The type of grip equipment needed is predicated on the kind of camera and lighting approach used in the film. A trend over the last several years has been that of conservation, resulting in the use of more metal materials, like pipes and scaffolding clamps, rather than wood, which isn't as re-useable. To do that, we've stolen other industries' concepts, like the triangular truss, which was pioneered by the rock 'n' roll people. We also use amateur radio antenna tower material, which is modular, strong, light, cheap and re-useable.

This new approach to construction impacts the concept of systems management. Once it's clear which materials are necessary, one can plan accordingly. For example, the radio antenna material is available in most large American cities. Instead of carrying crane track, you can buy a construction material called lana beam — which, when modified, makes great crane track — at any lumber yard. If the material is available and it's more cost-effective to buy it there, that's what you do. During scouting, the key grip will visit all the local lumber yards and hardware stores to see what he can get.

An exaggerated version of this happened to me in Thailand — although it could have happened in any foreign country. We needed a Chapman Titan crane which had to be shipped over by boat. It turned out to be too expensive to ship crane track, so we looked around for the means to build our own crane track. We ended up making it out of mahogany, which is as ordinary in Thailand as pine is in this country. (In fact, if we'd asked them to make it out of pine, it would have cost a fortune.) But we had to know something about mahogany: you don't nail into it, you drill a hole. You also have to know that it absorbs water like crazy and gets very heavy. So we had to have the local grips varnish it so it wouldn't get waterlogged and impossible to lift. A cinematographer has to know things like this. Without this knowledge, you'd end up with 300 feet of crane track that weighed 90 tons.

Thousands of pieces of knowledge garnered over years of work are applied when an experienced cinematographer makes a seemingly simple, mundane decision. Often the cinematographer him- or herself doesn't even recognize the degree to which experience helps form good decisions. Take dollies, for instance: there are crab dollies that move in every direction, sled dollies with double-flanged wheels on them that go on pipe, and big platform-type Western dollies with big balloon tires.

One must also know about the different options in laying dolly track. One technique is to lay down plywood and have a base called sleeper track that

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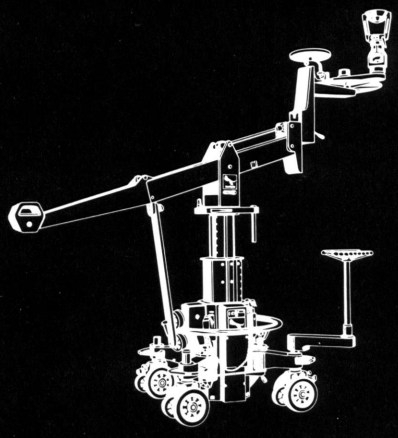

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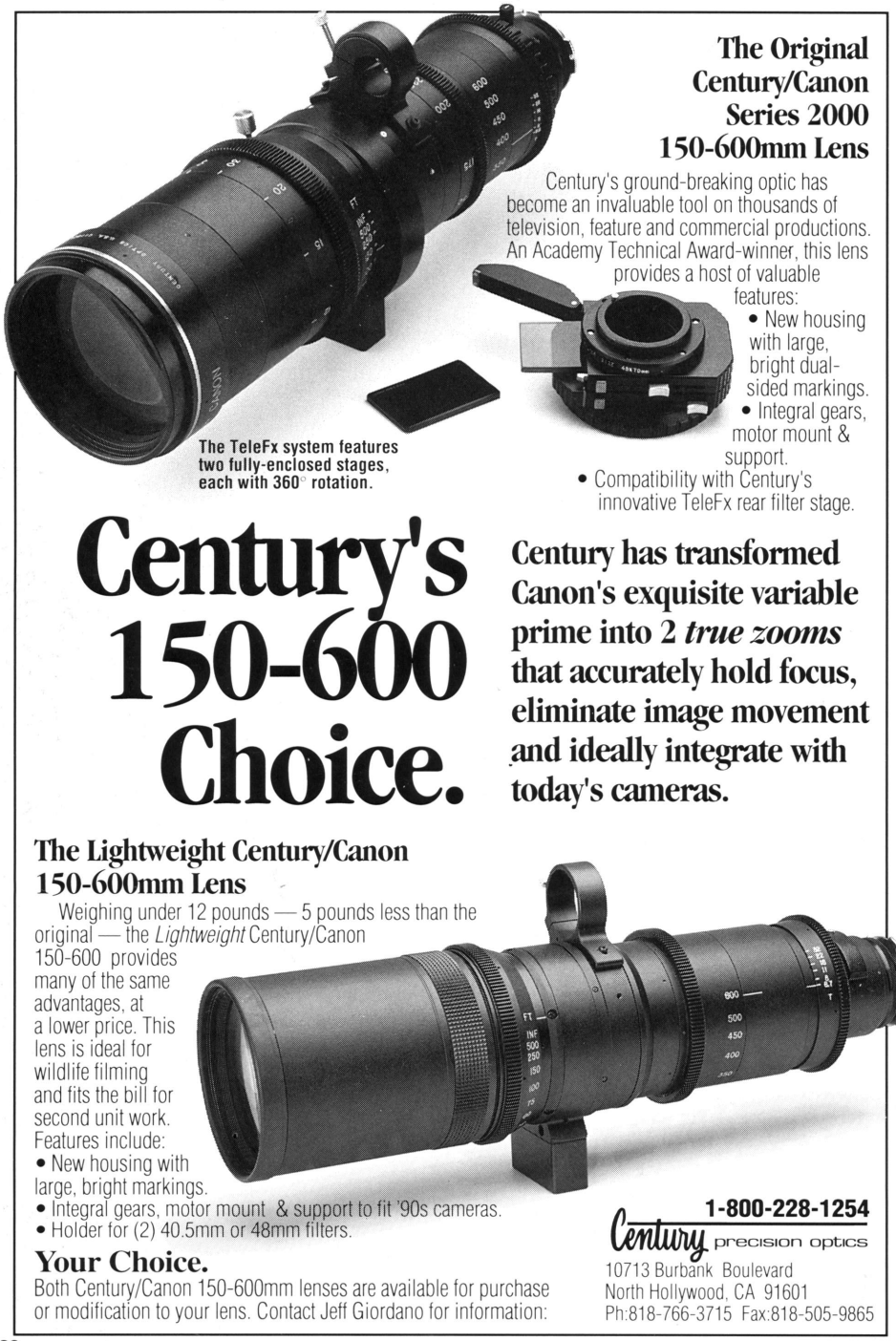
makes the plywood rigid, which works well in conjunction with a crab dolly. Scissor track, pipes that have collapsible ties between them, is good because it stores very easily. There's also a system with 20- or 30-foot sections of black pipe, and spreaders or railroad ties made of 2X4 with notches in them. Or you can simply lay down 1X12 or 2X12s and run the dolly on that, which is particularly good if the actors have to walk across the dolly track, because then they don't have to step up and over something.

So, when the story calls for a moving shot, the cinematographer must know which of these methods is appropriate to the situation. Each one takes a different amount of time to set up. Some of them are good for some situations and bad for others. For a moving shot, the cinematographer must pick the most efficient, easiest and least time-consuming method of doing it. I always try to use the lowest technology. This usually makes it easier to execute the shot successfully.

Conclusion

As the only person on the set with the big picture of how all the various systems need to integrate, the cinematographer must be knowledgeable about everything from carpentry to lighting. That means not only being responsible for choosing the right camera, electrical and grip equipment but tailoring a system that will maximize the resources on that particular picture — and making sure the right people know what's needed, at the right time. Making a picture is a plotted, planned, coordinated strategy, and if you don't come up with a plan for it, you're not going to get what you need.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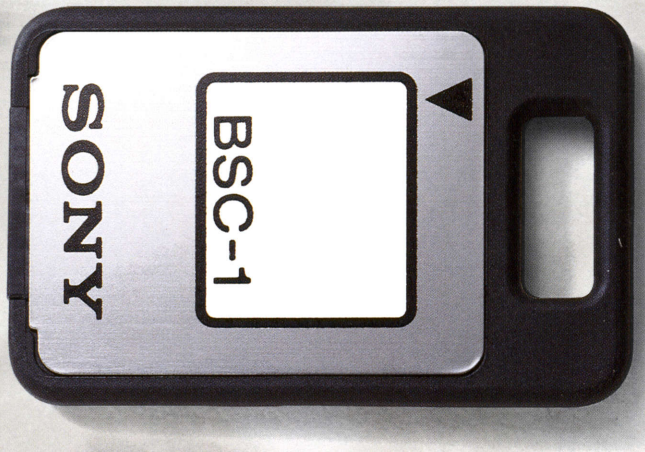

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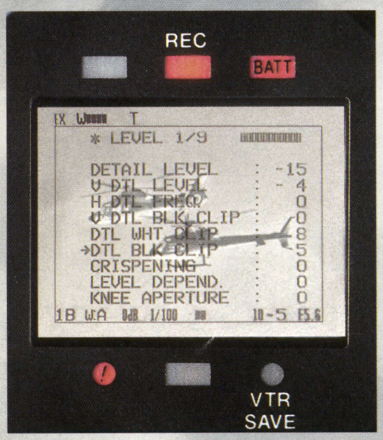

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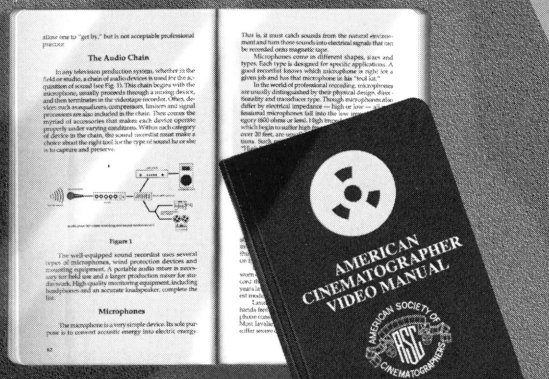

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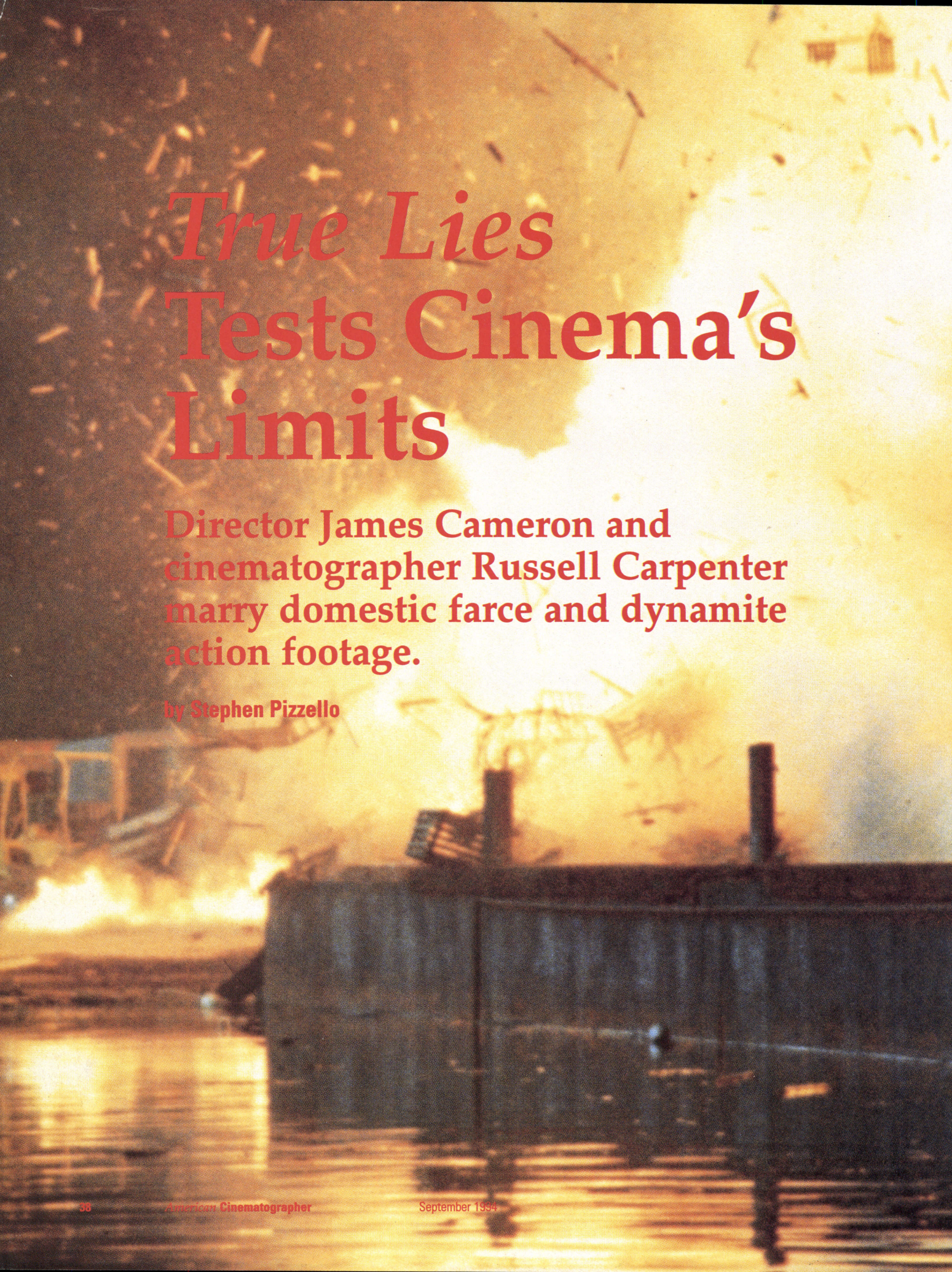


True Lies Tests Cinema's Limits

Director James Cameron and cinematographer Russell Carpenter marry domestic farce and dynamite action footage.

by Stephen Pizzello

Directed by
James Cameron

Produced by
Stephanie Austin
and James Cameron

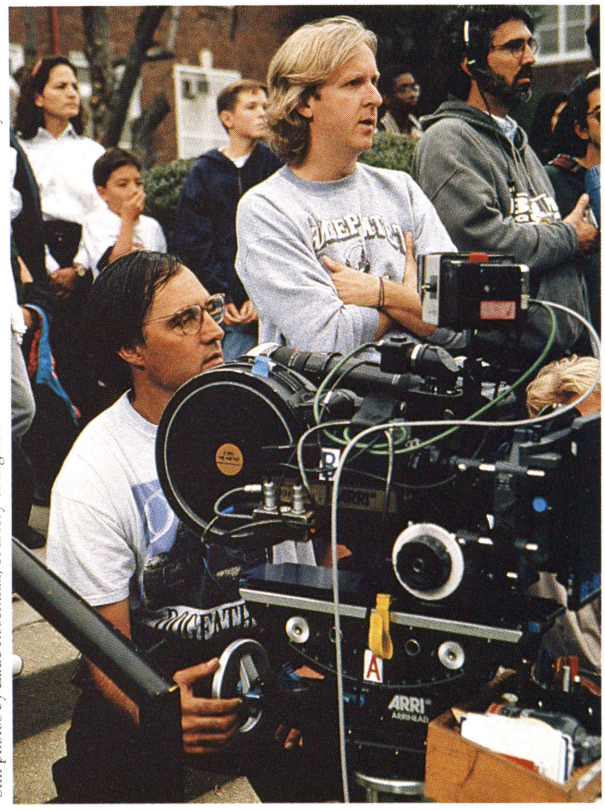
Director of photography
Russell Carpenter

Previous pages: ***Secret agent Harry Tasker (Arnold Schwarzenegger) narrowly escapes a fiery end at a terrorist compound in the Florida Keys.*** **This page, top:** ***Cinematographer Carpenter (left) and director Cameron (center) work out a shot on location.*** **This page, below:** ***The shamelessly sleazy Simon (Bill Paxton) takes Harry for a spin in a mint-condition Corvette. The crew mounted a Technocrane on the back of an insert car to keep the camera mobile. Supplementary lighting was generated from diffused 2500 HMI Pars attached to the insert car.***

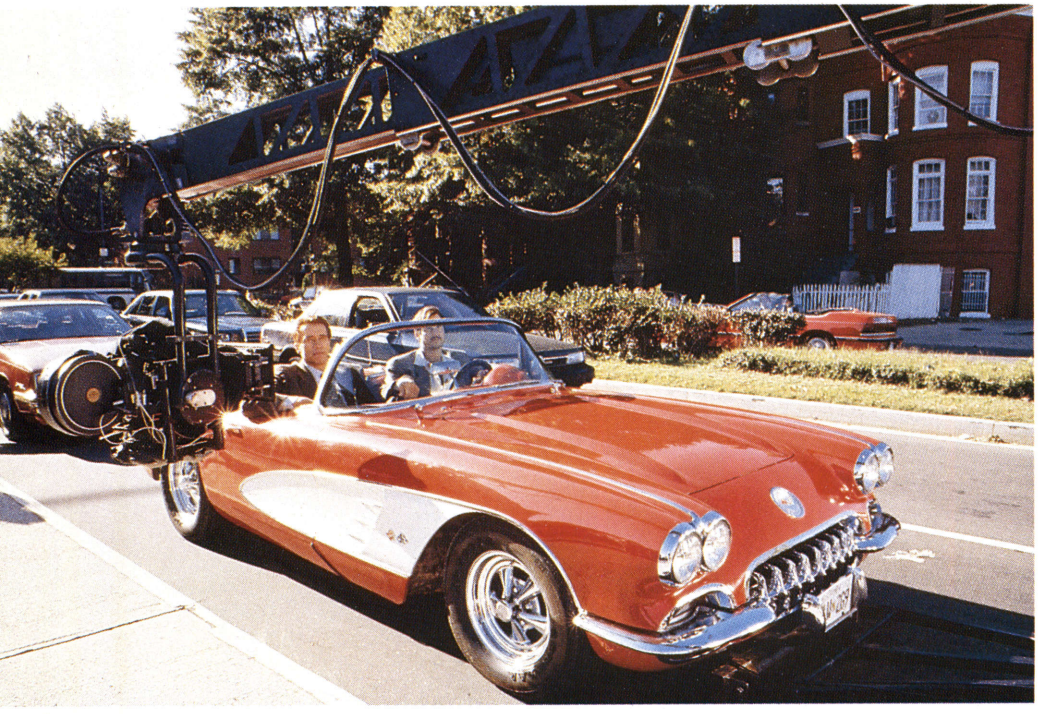
"In sickness and in health," "through good times and bad" and "'til death do us part" are incantations familiar to wedded partners the world over. These solemn vows may also sound familiar to crew members who have worked under the rigorous whip hand of director James Cameron, a modern master of the action-adventure genre.

"Working for Jim is like playing the toughest room in Vegas. Because he's such a perfectionist, and because of the massive scale of his pictures, you know that some days are going to be agony," admits director of photography Russell Carpenter, who was collaborating with Cameron for the first time on *True Lies*. "But when I watched the finished film, all I could think was, 'My God, it was all worth it.' It's not often that you get the chance to create images that no one has ever seen before."

Described by Cameron as "a metaphor about modern marriage," *True Lies* does indeed deliver the goods, pushing cinema's limits in spectacular fashion. Rumored to have a budget in excess of $100 million, production consumed seven months (from August '93 to March '94), during which time cast and crew often found themselves toiling through highly stressful, seemingly endless workdays. The shoot's logistical demands would have tested Patton himself, and call sheets often resembled inventories for a second invasion of Normandy ("When you see Harrier jets and helicopters listed under 'equipment,' you know it's going to be a tough day," Carpenter chuckles). During one legendary stretch while shooting in the Florida Keys, the crew worked for 12 days in a row — the last four without stopping for lunch. Even the general himself concedes that the campaign exacted a heavy toll on the troops. "We all got a little burnt," Cameron says. "The Florida shoot was probably our low point, because it was right before Christmas and everybody wanted to go home for the holiday. It was absolute, flat-out, turbo-charged filmmaking. We all flew back together, and it was like coming back from a war. But in January, everybody came back to work with this weird feeling of being the platoon that had been through hell and survived. There was a sense of bonding, and the shoot was cake from that point on."



Still photos by Zade Rosenthal, courtesy of Lightstorm Entertainment and Twentieth Century Fox



Aware of his well-documented reputation as a taskmaster, Cameron defends his means with two important ends: the big screen and the box office. "There were no easy shots on this movie, and if they were easy I found a way to make them hard; I'm sure anyone on the crew can attest to that," he says. "But to me, that's what filmmaking's all about. You just push the envelope every day. Some people respond to that, and those are the people I work best with. Russ got into it, [B-camera

and Steadicam operator] Jimmy Muro got into it, and so did lots of others. People who are real filmmakers in their heart and soul get into it. I don't get along too well with people who are just punching the clock or trying to slide through it; they can go shoot a sitcom or something.

"Yes, the budget was big," he adds. "But you know what that translates into? A lot of good value for a $7.50 ticket. The money is up there on the screen, because that's the kind of movie I make. At a time when people are being conditioned to expect less and less from a movie — because budgets are getting so high, and it's getting more difficult to do really mind-blowing stuff — we just do it anyway. People should feel good about that, and judging by the returns on most of my pictures, they usually do."

With *True Lies,* however, Cameron is gambling that his hardcore audience — as well as the general viewing public — will follow him into previously uncharted comedic terrain. Unlike the director's prior pictures, which offer a selective number of gags to leaven the mayhem, *True Lies* is, at its core, a domestic farce taken to fantastic heights. The film's plot crosses Boris and Natasha with Dagwood and Blondie: Harry Tasker (Arnold Schwarzenegger) is a crackerjack spy whose assignments from the top-secret Omega Sector take him on wild, Bondian adventures all over the globe. But to his demure wife, Helen (Jamie Lee Curtis), and rebellious daughter, Dana (Eliza Dushku), Harry is simply the Good Provider and the Boring Dad, a computer salesman whose idea of excitement is hawking the latest software products. The Tasker women are also unaware that Harry's jocular buddy Gib (Tom Arnold) is actually a fellow agent who faithfully accompanies his friend on his clandestine exploits.

The Taskers' daily routine changes dramatically, though, when Harry is assigned to track down the Crimson Jihad, an Arab terrorist faction that has somehow gotten its hands on four thermonuclear warheads. Led by the hubristic Aziz (Art Malik), the group intends to destroy four different American cities unless its fanatical demands are met. It's up to Harry to save the day, but the superspy's concentration is short-circuited when he accidentally discovers that his beloved Helen may be having an affair with a suave mystery man (Bill Paxton). Harry marshals all of his snooping skills to find out if Helen has been unfaithful, and in the process manages to drag his family into the midst of a national nuclear crisis.

Translating this outlandish tale to the screen was a Herculean task, but Carpenter was up to the challenge. Previously known for his eye-catching work on relatively minor films (*Lady in White, Solar Crisis, The Lawnmower Man, Hard Target*), the director of photography suddenly found himself facing some of the most complex setups in movie history. When asked why he chose Carpenter over more well-known cinematographers, Cameron replies simply, "Dialogue. I've got to work with a director of photography I can talk to, and whom I feel has something on the ball creatively. My reason for going with Russ wasn't so much his past work — though that was sound — but his enthusiasm and willingness to try new things. I had actually interviewed Russ for another film, *The Crowded Room*. He came back to me with a booklet of photos that he'd cut out of magazines, saying, 'This is the look I think we should use for this, or that.' Even though I didn't necessarily agree with him on all those things, I saw that he at least had an opinion and a vision. He brought something to the table, and I respected that."

The "table" in question, of course, was laid out for the cinematic equivalent of a four-star Thanksgiving Day feast. In preparing the meal, Carpenter had the advantage of the finest cookware money could buy. The production's camera truck carried close to a dozen cameras at all times, including two Arri 4 BLs, two Arri 3's, three Eyemos, a Moviecam for Steadicam work, Cameron's own Arri 2C, and a modified Arri dubbed the Fastcam ("The Fastcam was basically a glorified Pogocam," Carpenter explains. "The image from

Smugly ensconced behind a one-way mirror, Gib (Tom Arnold) and Harry interrogate Harry's wife, Helen. Carpenter mixed blue and red light to give the control room a cold, hostile feel; the cinematographer lit Schwarzenegger's face with a fiber-optics package supplied by LTM, and edged Tom Arnold with hidden Dedo lights.

the Fastcam went through a head-mounted video system so we could see what the camera was seeing.") His basic lenses were Zeiss primes and Cooke zooms.

Carpenter also enjoyed the kind of logistical perks that only a blockbuster budget can support. In order to achieve a consistent look for his night exteriors, which featured the cool blue tint that has become a Cameron trademark, the cinematographer used all of the manpower at his disposal. "Jim believes in a luminous moonlight look, which he calls 'lucid night,'" says Carpenter. "We didn't use any filters to achieve it. We exposed the key side of our night exteriors almost up to key, using uncorrected HMIs. The blue look was later enhanced in the timing. For the night street work in Washington D.C. and Los Angeles, location scouts gridded the cities and found all of the streets that are currently lit with mercury vapor lamps, which tie in extremely well with HMIs. What you'll notice in 90 percent of the shots is that all of the street lighting is the same color as the HMIs. The scouts would come to us with maps and then we'd go out and spend the night driving to all of the places that had mercury vapor. If we loved a location but it had sodium vapor instead of mercury, we'd have the city go in and replace those lamps for us. We wanted the environmental lighting to support our own lighting, which included Condors, Muscos and Night Suns.

"We used combinations of units because we wanted the night shots to have details and depth," he continues. "Jim loves to see into the distance, and that often means lighting into the very deep background. We usually combined our Muscos and the Night Sun. The major Muscos are excellent for lighting huge areas, but you can't flag them, so we'd usually bring our Night Sun into the foreground area, backlighting or lighting three-quarter-back. We had a lot of control over that light in terms of what we could flag and shade. We also used the mini Musco, which allowed us the luxury of shooting at different speeds."

Elaborating upon the concept of "lucid" night photography, Cameron explains, "There are a lot of cues that tell the viewer it's night, but you can see everything. You get that look by a combination of lighting and exposure: a lot of rim lighting for separation; a lot of fill light, especially protecting the actors' eyes; and a lot of mixed light in terms of color — full-blue HMI with white. We used a lot of white light to accent. I'd never done that on this scale before, and neither had Russ, but the approach was based on a couple of shots in *The Abyss* that I really liked, especially one scene that takes place in a control room. The scene is mostly blue, but there's a white light on, and that white accent sort of reminds you that you're looking at a blue image. A lot of people just go monochromatically blue; the eye adjusts to the blue, and after awhile it becomes sort of a black & white image with a blue filter over it, and it's not as interesting. On *True Lies*, I said to Russ, 'Let's take that idea [from *The Abyss*] and expand upon it.' We'd either fill with white in a night scene, or we'd rim with white and fill with blue."

The overall look of the film, Cameron says, is more traditional than the visual schemes of his previous efforts. The director sought to infuse *True Lies* wth the spirit of the James Bond films and television shows like *The Man from U.N.C.L.E.*, but shied away from outright visual homages. "I don't believe in copying the look of other films," he maintains. "Sometimes I'll sit and drink tequila and watch MTV with the sound turned down to get new ideas for shots, but looking at other movies for inspiration is just not valid for me.

"*True Lies* is slightly stylized, slightly unreal, but not so much in the cinematography," he adds. "We didn't try for the vampy, unreal look of a film such as *Dick Tracy*, and there's really nothing in this movie like the T-1000 stuff from *T2*. It's not a science-fiction film, so you're not going to see imagery that has that degree of surreal impossibility. The outrageousness of the film comes from the situations, which are pretty wild. With the look,

Taken hostage by the terrorists, Harry and Helen (Jamie Lee Curtis) have a heart-to-heart about the state of their marriage.

Harry, Gib and fellow agent Faisil (Grant Heslov) brief the head of Omega Sector, Trilby (Charlton Heston) about their latest mission. Carpenter tried to build up the ambient light on this set to about a T4 to get the depth and detail Cameron wanted. Custom fluorescent lighting fixtures were built into the set, but the production was unable to get the special 3200 K bulbs they had intended to use, and had to gel. Electrical cables were hidden above the false ceiling and fed down through the set's vertical pillars so that the camera could move freely.

we're trying to say, 'You're not supposed to take this seriously; it's a romp.' This film is more stylized than my others in the sense that you're meant to be a bit outside the movie, having fun with it. It's really a story about a marriage, and everything else is window-dressing.

"We tried to give the domestic scenes a warmth and lightness, and then later we tried to lend them an almost black comedy feel, colder and a little more expressionistic — nothing radical, but just enough so you can feel a shift in tone. Later, in the action stuff, we went for lucidity and clearness, an almost hyper-real look that allows you to see everything without it feeling blown-out. I spent a lot of time with the printing and color timing, and it definitely came through in the release prints."

Both Cameron and Carpenter maintain that those prints — struck in both 35mm and 70mm — are among the finest they have ever produced (release prints were handled by Deluxe, while CFI provided interpositives and dailies). The filmmakers reserved special praise for the quality of the 70mm prints, which were blown up from the 35mm negative. Cameron reports that his past attempts to strike 70mm prints from 35mm negative have been satisfactory but hardly spectacular. "The 70mm prints of this film are shockingly great in terms of image quality," he states. "This is the fourth time I've printed in 70, and it's the first time that the 70 prints have looked substantially better than the 35s. The 35mm prints of *True Lies* are very good, but the 70s look like Imax by comparison. We ran tests side by side, and it was no contest."

Cameron attributes the startling improvement to Kodak's new 5244 EXR color intermediate stock. 5244 employs ultra-fine silver halide crystals and a new generation of advanced color couplers (chemicals which form dyes in the red, blue and green sensitive layers of color negative film in proportion to colors in the scene) to produce cleaner, sharper images with considerably reduced granularity. This clarity shows up most dramatically in the film's blacks, which Cameron describes as "bullet-proof."

To best exploit the film's array of eye-popping scenarios — and to give themselves some vertical headroom to adjust tricky images ("Harrier jets don't always line up the way you want them to," Carpenter laughs) — the filmmakers opted to shoot in the Super 35 format, which was also used for *Terminator 2*. In order to ensure the best possible grain structure, Carpenter exposed the film's stocks (mainly Kodak's 5296 and 5245, but also some 5293) fairly conservatively.

The duo's daily working method was influenced by Cameron's use of a device called the Vid Stick, a handheld video viewfinder he designed with the help of his brother Mike. "Russ and I fell into a groove which went something like this: we'd come onto the set, talk about the upcoming scene a bit, and then I'd start setting up with the actors and block the shot with the Vid Stick. Let's say I wanted to work

Cameron (holding camera) demonstrates his love of adventure as he executes a handheld shot of Schwarzenegger stunt double Billy Lucas in mid-hover.

on a 35mm lens: I'd ask for a 35 from the primes box, stick it on the video viewfinder and switch on the transmitter; the image would go simultaneously to a deck in my hand and back to a separate video station. After turning on some lights just to rough things in, Russ would watch at the video station, or walk with me as we moved through the shot, which would usually be a tracking master, a Steadicam master, or possibly a crane shot — although I could only approximate what a crane shot would look like, because I couldn't hold the Vid Stick any higher up than about eight feet, the height of my reach. Usually I'd try to block the master, lay it down on tape, and then pick off some of the coverage at the same time. That process would give me a rough tape of what we were going to shoot for the next couple of hours, with the actors and the dialogue. If there were any questions about framing, or how the camera was going to move, we'd have it all on tape. Russ could go off to work on the lighting, using the tape for reference, while I went off to consult with the actors on their performances.

"Eventually, we'd get back together at the monitor, and he'd say something like, 'You did this twice, and the second time you popped over a little bit to the left, but I could really use the space by that palm tree.' At that point there would be a negotiating phase, during which we'd negotiate the frame line based on the video. Then we'd start shooting. This method didn't necessarily speed up the process, but it made it a hell of a lot more precise."

Understanding that most viewers will enter the theater with a "Go ahead — impress me" attitude, the production team went for broke while shooting the opening sequence of *True Lies*. Demonstrating espionage expertise and *je ne sais quoi* in equal proportions, Harry scuba-dives under a frozen lake and past an elaborate outdoor security detail at a Swiss chateau; peels off his wetsuit to reveal the tuxedo beneath; infiltrates a swanky cocktail reception; accesses a private computer in an upstairs study; and eludes capture by dancing a red-hot tango with beautiful art dealer Juno Skinner (Tia Carrere). Eventually, Harry's nonchalance backfires when he attempts to exit the premises by simply walking out the front door. When a guard asks to see his invitation, Harry must resort to Plan B; distracting the guards by detonating an explosive charge via remote-control, he races through the chateau's snowy, tree-lined grounds as Doberman pinschers and assassins on snowmobiles give chase. As Harry wends his way through the woods, guns blazing, his Omega Sector cohorts, who have monitored his every move from a nondescript van, skid along icy roads toward a rendezvous point.

This sequence alone required an impressive array of photographic tricks and special effects. The establishing shot of the Swiss chateau involved a blend of several elements: a mansion in Newport, Rhode Island served as the "chateau"; the water was photographed near Lake Tahoe; the background Alps were provided by matte artists; and the foreground pier, shot during principal photography, was enhanced by John Bruno and his corps of technical wizards at Digital Domain, Cameron's new effects company. The elements were then composited seamlessly in digital post. [Ed. note: in-depth coverage of the film's effects will appear in the December issue of *AC*.]

The various effects elements, recorded with VistaVision cameras, were shot at the same time as the first-unit photography. "Jim didn't want to limit the [effects] shots at all in terms of movement," Carpenter notes. "He would have the VistaVision cameras do whatever a normal production camera would do, and then the burden would be on the people at Digital Domain to make the background mattes work for the movement."

Carpenter's own burden on the sequence involved several stages. The underwater footage was shot in a wave research tank at a facility in Escondido, California and lit with sea pars below the water and 12Ks from above (the facility's ceiling was also blacked in to keep skylight out).

The interior scenes at the mansion were complicated a bit because the crew was prohibited from hanging fixtures. Carpenter solved this problem by bouncing 7K Xenons off floating silver balloons suspended from thin filament wires. Further supplemental lighting (2Ks and 1Ks) were hung from an aluminum grid system that was painted the same color as the walls for camouflage.

The exterior chase scene, meanwhile, combined logistical planning and some old-fashioned, on-the-spot ingenuity. "The problem with lighting for action sequences on the snow and at night is dealing with extreme contrast on the slopes — trees that would block things out, and snow that would go too hot," Carpenter says. "We shot a lot of the sequence at Boreal, a ski resort near Lake Tahoe, and the rest at Donner Pass, in California. Getting the lights to the top of the resort was very difficult. We decided to light four basic quadrants, so we had four huge, 30-foot towers assembled in the different areas, and then placed 12Ks and Xenons on top. The lights and everything else were helicoptered in. Working in the snow is like working underwater; you're up there on the side of this mountain, and you're thinking, 'I just don't want to fall and slide 400 feet on my backside.' You know that when you ask to lay a dolly track, or move a light, it will take three or four times as long as it would in the studio. This sequence was also tough on the electrical crew.

"The first unit spent three or four days there, and the second unit, led by director E.J. Foerster and cinematographer Shelly Johnson, spent about five more days. While the first unit

Left: ***While shooting the film's climax, the camera crew was suspended from a makeshift "camera platform" attached to a crane arm high above downtown Miami.*** **Below:** ***An overhead view of a mock Harrier jet merely hints at the sheer size of the production.***

Simon's ham-handed attempt to seduce Helen is disrupted by Harry and his Omega Sector cohorts. The interior of Simon's low-rent "bachelor pad" was built on a stage. To simulate a helicopter searchlight, Carpenter employed a Xenon light on a Titan crane.

was off shooting other scenes, the second unit blocked in the lighting for all four quadrants. Fill light was usually just bounced off the snow. Our thinking was, 'We've got the world's biggest bounce cards right here,' so we would fill by bouncing a conventional HMI into the snow. If the shot was moving, we might track the action with a Xenon light. A lot of this show was done with rear-screen projection, and some of our biggest lighting challenges involved lighting mountain roads for the rear-screen shots. We found a nice winding road up in Donner Pass, and we put our Night Suns and Muscos up along this sides. Because of the reflectivity of the snow, we were able to light huge areas for both regular production photography and rear-screen plates.

"One major difficulty in shooting snow is that if you're backlighting snow, it will sometimes go much too bright," he adds. "That sometimes works to your advantage by giving you dramatic contrast, but it can also just blow out the scene. Jim came up with a solution that was pretty simple and brilliant at the same time: we just raked the snow at a 90-degree angle from the light, and it completely broke it up and knocked two stops off the snow. I thought that was really clever."

Perhaps the most impressive aspect of *True Lies* is the film's ability to top itself repeatedly as it builds toward its high-octane finalé. As exciting as it is, the snow chase is just an hors d'oeuvre for the next major sequence, a truly epic crescendo of action that begins in the streets of Washington, D.C., when Harry and Gib notice that their truck is being followed by a carload of gun-toting terrorists. In an attempt to lure the bad guys off the street and into a showdown, Harry strides into a posh hotel, tracking his pursuers' movements with the help of a microscopic video camera hidden in a pack of cigarettes (the camera transmits a picture to a sophisticated pair of sunglasses, giving Harry electronic "eyes in the back of his head"). The terrorists eventually follow Harry into a hotel bathroom, but the special camera gives our hero a crucial edge in the ensuing shootout, during which the entire tiled facility is reduced to smoking rubble.

"The bathroom scene was done partly with KinoFlos set on a flicker generator, which is not the healthiest thing you can do with a KinoFlo ballast," Carpenter recalls. "We found that we were going through KinoFlo ballasts very quickly, but Jim wanted the effect that one light in the room was malfunctioning from the beginning of the scene. The site of the shootout had to be lit to a level where we could support shooting up to at least 120 frames per second for some of the action sequences. I had 2Ks pointing down through some slots in the ceiling to build up the overall stop to the T4 that I needed for the various camera speeds, which included 22, 40, 60 and 120 fps. In addition to the KinoFlos, we had some standard units built into a lighting fixture directly above Arnold, because we knew that some of those would have to be shot out. After the units get shot out, the electrical system goes haywire, and there's quite a bit of stroboscopic flashing to add to the excitement. We cut a hole in the ceiling just big enough to stick a Lightning Strikes! unit down through the hole, which was hidden by a room divider; that's what gave us the variable flicker effect. We would tilt the light one way or the other, depending upon which section of the bathroom we were shooting in. I also knocked the light down a bit by putting 10K scrims in front of the unit.

"Jim wanted to get a ton of coverage for that sequence, so we were constantly moving smaller units around to edge and line the action. Ninety percent of the lighting was coming from the ceiling, but often, in order to pick out certain things visually, I had other units hidden where the camera couldn't see them. For the shot where one of the bad guys comes at Arnold with a knife, we had lights coming from the other room to highlight the spraying water and to edge the bad guy. This technique involved a constant cat-and-mouse game between Jim and me; I'd run a unit

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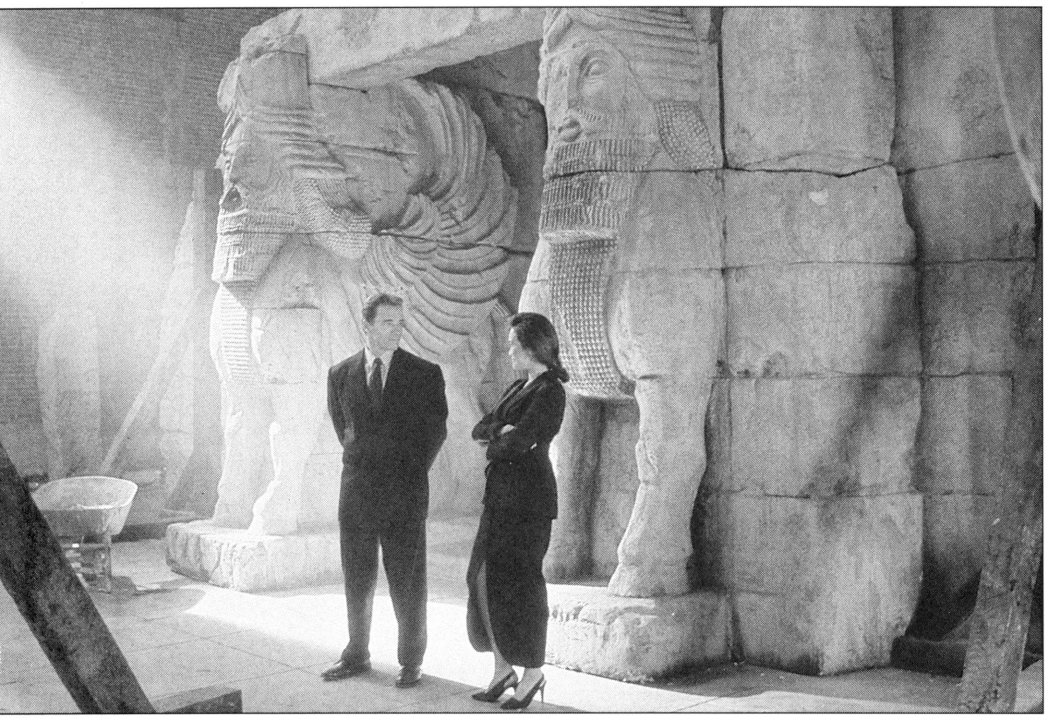


Harry and the beautiful but diabolical art dealer Juno Skinner (Tia Carrere) trade suggestive bon mots amid a warehouse filled with Persian antiquities. Carpenter lit this set with industrial fixtures that were rewired for higher voltages.

in and he'd say, 'No, no, no, the camera's going to pan over there, pull that unit out.' Or it would work the other way; when I thought I couldn't work a unit in, Jim might say, 'How come you're not lighting this?' We were always trying to guess which way the action would go."

Having eliminated two of his three pursuers while destroying the bathroom, Harry chases the group's ringleader, Aziz, out of the hotel and through the streets of D.C. After exchanging gunfire with Harry and the waiting Gib, the terrorist seeks a quick escape by commandeering a motorcycle. Undeterred, Harry knocks a police officer off his horse and gallops after Aziz, who accelerates right back into the hotel. The pair careen through the hotel's hallways, then race to the top of the building in separate outdoor elevators. Aziz eventually eludes capture by executing a stunt that would discourage Evel Knievel himself, rocketing his cycle off the roof of the hotel, across a precipitous gap and into the swimming pool of an adjacent hotel.

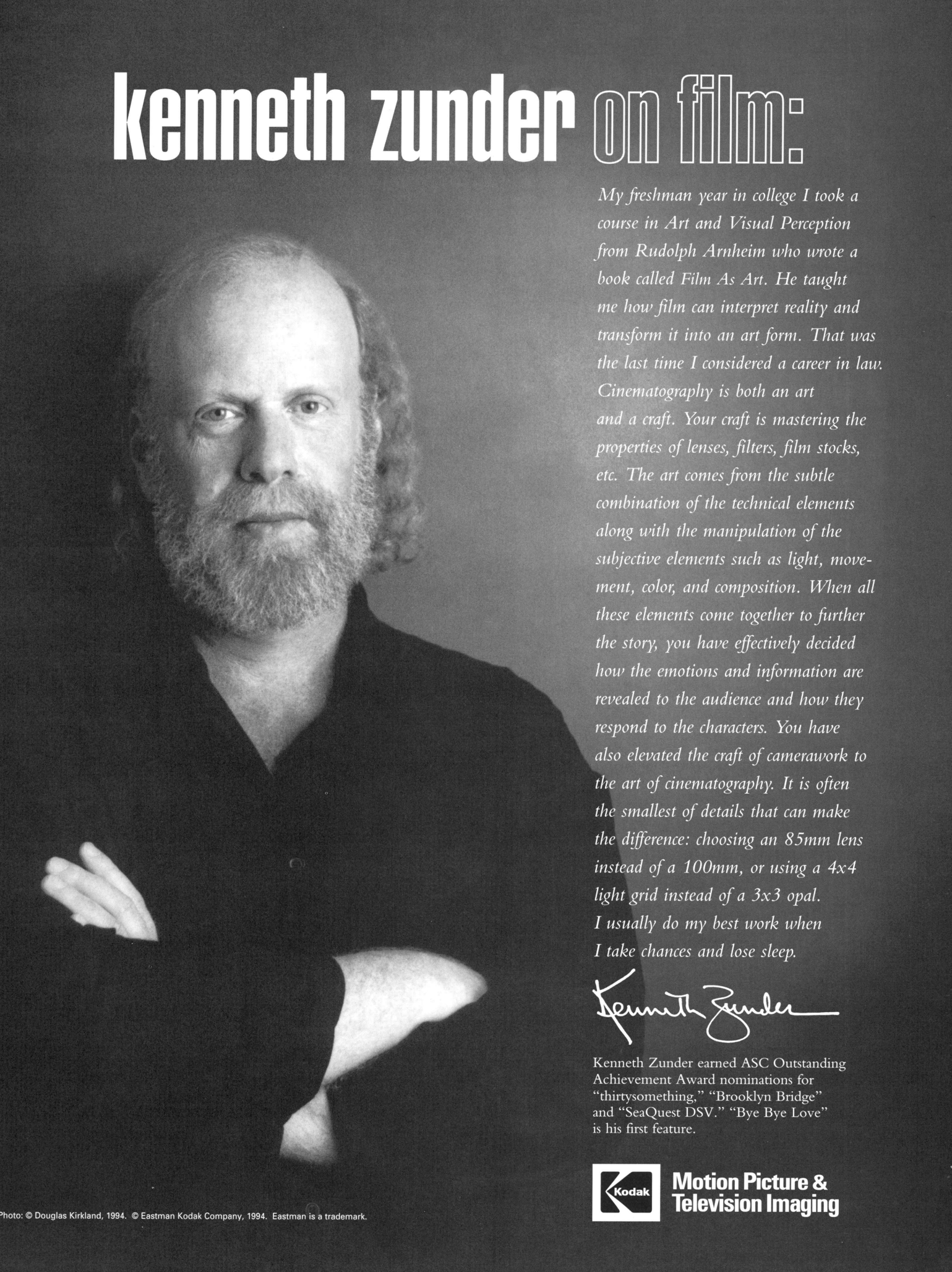
"The horse and motorcycle chase is one of my favorite sequences," Carpenter says with a grin. "Basically, you're dealing with a sequence that was shot over six or seven locations, and they all needed to tie together. The beginning of the horse and cycle chase was staged in Franklin Park in D.C. It was very difficult to shoot, because when we first scouted the location we thought we'd simply use the Muscos to light everything. Being the non-Easterners that we are, we said, 'Well, when we get back here in November, the leaves will be gone and we'll be able to shoot the lights down through these trees.' But every damn leaf stayed on those trees, and it was very hard to light the park sequence from overhead. We had to wire the park and light much of it from the ground, with small units hidden behind trees, with 1200 and 2500 HMI Pars up in the trees, and with lights simulating practical light. It was a rigging gaffer's nightmare. As Arnold was chasing the cycle on the horse, we had a light on a camera car out in the street, tracking along and providing illumination to edge the characters' faces."

The hotel footage was shot at two main locations: the Bonaventure Hotel in Los Angeles, and the Ambassador Hotel, an L.A. "movie hotel" in which most of the stunts were staged. In order to lend the Ambassador an elegant feel, Carpenter and his crew taped individual KinoFlo tubes to the side of vertical pillars in the hallways. "The camera angle was so wide and so low that lighting from the ceiling was definitely out of the question," he says. "We also put 2Ks and 5Ks on the floor to line and accent certain groups of people or sections of the action."

Carpenter singles out Steadicam expert Jimmy Muro for his invaluable contributions to the sequence. "We rehearsed the horse until he knew what he had to do, but wasn't bored with it. We had a limited window on how many takes we could do, and usually only managed about four. It really helps to have someone as good as Jimmy, who can make those on-the-spot framing decisions when you're working with an animal who's not going to hit the mark every time."

In order to protect the hotels' floors and allow the horse better footing, the crew lined the hallways with special padded carpeting. "Since the Ambassador is a movie hotel, we could do whatever we wanted there," notes Carpenter. "But when Arnold and the horse first come in off the street, they're in the real hotel. Occasionally the horse and the stunt rider would miss a turn and knock a chunk out of a pillar. We were constantly paying for the repairs."

Carpenter's biggest practical dilemma was matching footage from the two hotels. The Bonaventure is a more modern edifice than the elegant Ambassador, and it also demonstrated what Carpenter describes as "tremendous light-sucking capabilities. We had to run miles of cable and work at several different levels to light it up; it has five floors just in the lobby area. We put sea pars in the fountain, and wherever we could we'd put big 5Ks or HMIs around corners to edge Arnold and the stuntman. We


kenneth zunder on film:
My freshman year in college I took a course in Art and Visual Perception from Rudolph Arnheim who wrote a book called Film As Art. He taught me how film can interpret reality and transform it into an art form. That was the last time I considered a career in law. Cinematography is both an art and a craft. Your craft is mastering the properties of lenses, filters, film stocks, etc. The art comes from the subtle combination of the technical elements along with the manipulation of the subjective elements such as light, movement, color, and composition. When all these elements come together to further the story, you have effectively decided how the emotions and information are revealed to the audience and how they respond to the characters. You have also elevated the craft of camerawork to the art of cinematography. It is often the smallest of details that can make the difference: choosing an 85mm lens instead of a 100mm, or using a 4x4 light grid instead of a 3x3 opal. I usually do my best work when I take chances and lose sleep.
Kenneth Zunder
Kenneth Zunder earned ASC Outstanding Achievement Award nominations for "thirtysomething," "Brooklyn Bridge" and "SeaQuest DSV." "Bye Bye Love" is his first feature.
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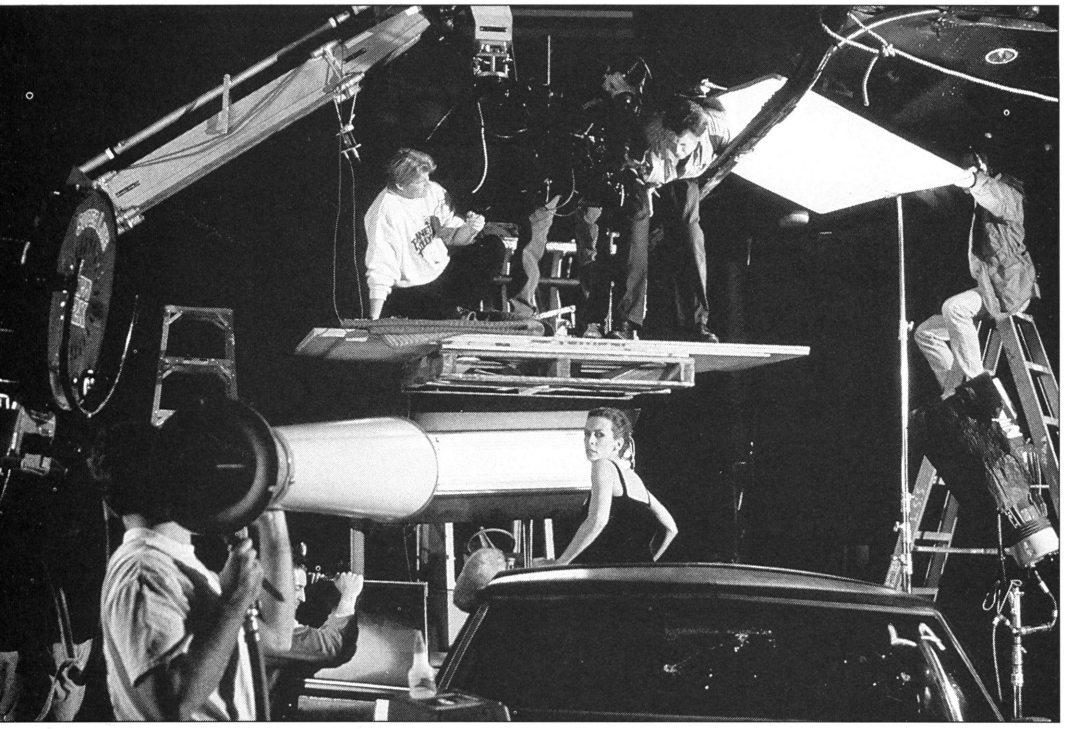


Jamie Lee Curtis practices her reactions as the crew prepares to shoot studio footage to tie in with the chase scene on Florida's Seven-Mile Bridge.

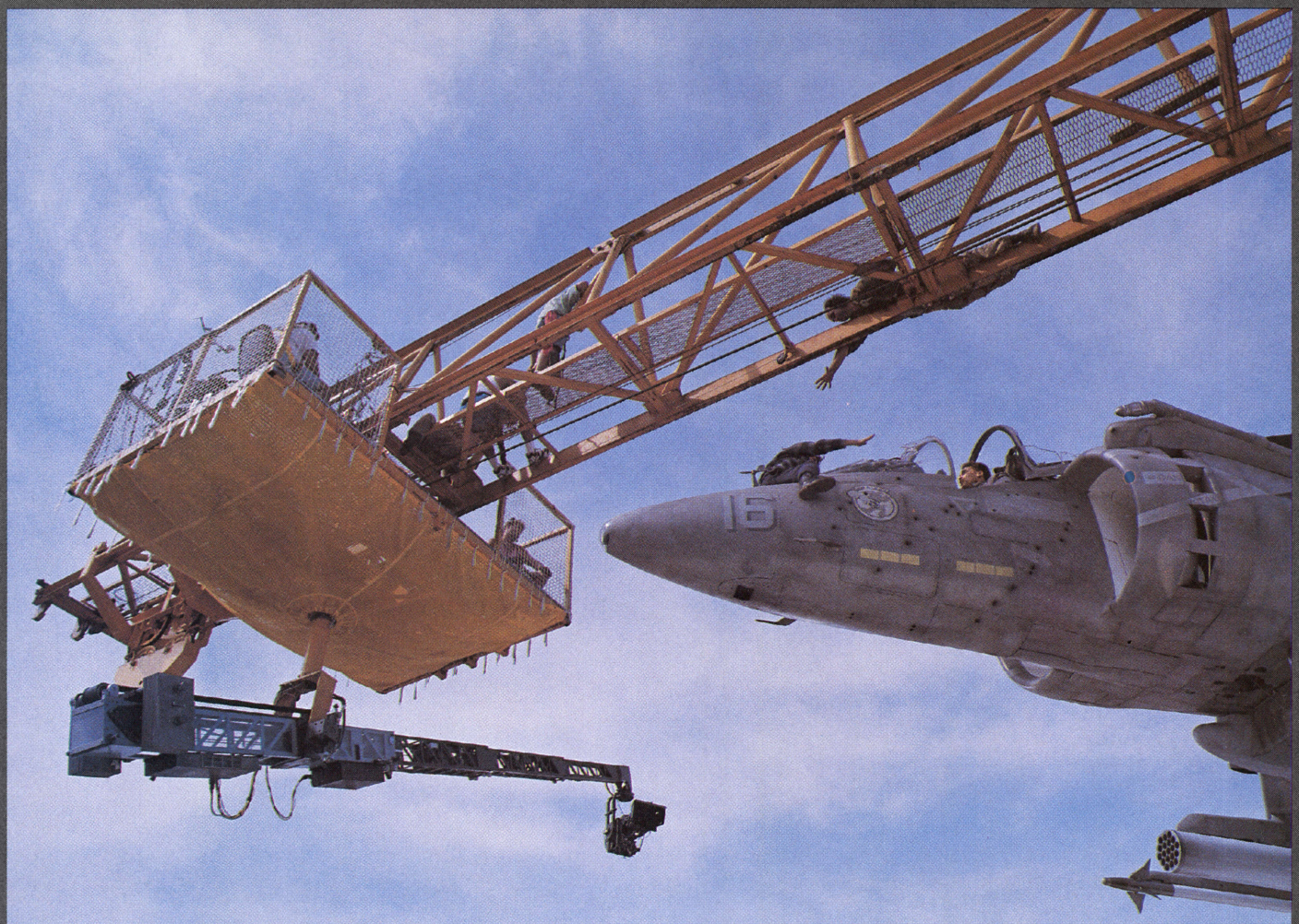
had special lighting built into the elevators; we used KinoFlos because they don't use much power and they put out a lot of light. We also edged the elevators with special twinkle lights for added visibility."

Lighting the hotel's interior was difficult, but things got even more complex when the chase reached the hotel's tinted-glass elevators, which run up along the Bonaventure's exterior. "For the elevator ride up, we had a rubber horse that was operated by a guy inside while Arnold or a double sat on top," Carpenter says, shaking his head in amazement. "He could make that mechanical horse do some incredibly lifelike movements. One of my happiest shots of the movie is an exterior shot from the top of the building, with the bad guy in one elevator and Arnold and the horse in the other. You'd think it's either a miniature or some special process, but it's just a regular production shot. The nightmare there was that the Bonaventure is a black building with black glass. We went around to as many rooms as we could and installed practical high-intensity bulbs in practical lamps to get some detail. Then we shone a mini Musco into the side of the building to pull up the basic exposure on the elevators, and to bring out the rib-like structure of the building. The catch was that wherever you put a light to illuminate the building, you'd see it in the glass. And whenever the camera moved, the reflection would bounce off a different facet of the glass. I spent several preproduction hours walking around the building, and eventually found a spot where I could put the light so it wouldn't show up. As a final touch, we put a major Musco down the street to light up the other buildings in the area, which added even more texture and detail by creating reflections on the Bonaventure's surface. The whole thing was shot with a Lenny arm hanging out over the very top of the building."

The hotel's "rooftop" was actually a set built in an aircraft hangar at California's Van Nuys Airport. "Base lighting was done from the ceiling because of the reflective surfaces," Carpenter notes. "We hung a lot of chicken coops to build up our ambient light. We also hung up a massive TransLight of the Washington area. We had to pay special attention to sags and folds that gave away the fact that it was a TransLight. That wasn't our only problem, though: the TransLight was put together in vertical slits about six feet wide that were glued to each other. They started to come apart during the shoot, and it became a real mess dealing with Washington falling apart in the background."

All of the downward shots in this sequence are actually digital composites, including the view of the street beneath the motorcycle as it leaps across the void. "The jump off the building was maybe 30 feet onto a ramp that was covered with green material," Carpenter reveals. "We shot footage of a real pool at Warner Hollywood. As we filmed the plate shot, which was taken by a distant camera on scaffolding, we were also shooting live-action footage at ground level. One of the joys of working with Jim is that he's going to extract as much footage as he can from each sequence; you just have to be aware of that and light for a lot of different purposes at the same time."

The cinematographer found himself improvising yet again at California's Hansen Dam, while shooting a sequence in which Harry and Gib humiliate Helen's would-be suitor, a used-car salesman with a penchant for tall tales. "Jim wanted to start the sequence on a tight shot of actor Bill Paxton and then widen very quickly to reveal a towering overhead shot of the entire situation, with Harry and Gib interrogating Bill near the dam's edge. Because we were on a ledge, there was no place to put our lighting for the extreme wide shot, so we had to light the close-ups with a major Musco that was at least half a mile away. That was our key light; our fill was coming from another Musco light parked on the other side of the dam's spillway and hidden behind a building. The problem for me was that the [lighting] ratios didn't work out quite the way I wanted for the high overhead



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Demonstrating an expert spy's ability to improvise, Harry sears some terrorists with a makeshift flamethrower. Cameron felt that the pyro scenes in his earlier film* Aliens *(1986) were "too blown out," so he and Carpenter lit the compound set up to T5.6 to balance the flames and ensure good image saturation.

shot. When I came down for the low shot, the shadow of the camera was being thrown across Bill's face. So as we did the shot, both Muscos altered their lighting values — one panned on and the other softened. Necessity and fear make you do strange things. Later in the sequence, of course, we came in with lights we could control, because we were just shooting close-ups."

When the story's action reaches the terrorists' makeshift compound in the Florida Keys, the few remaining photographic limits are all but obliterated. Harry and Helen are held captive, but Harry eventually manages to escape amid a hail of bullets and explosions. The entire compound sequence is a virtual primer on film pyrotechnics.

"One thing I learned while shooting *Hard Target* is that if you're running several cameras at varying angles, it's inevitable that a few of those angles will be flatly lit," Carpenter relates. "But whatever looked flatly lit one second will look beautiful as soon as the explosion happens. So the explosions on *True Lies* lit themselves to a certain degree, although we tried to build up our ambient light so they wouldn't white out. We lit the entire set, which was about an acre in size, to about a 5.6, using two full-sized Muscos and a Night Sun."

Cameron explains that his approach to pyro scenes — such as the shot in which Schwarzenegger deep-fries some terrorists with a flamethrower — was developed while shooting *Aliens*. "The stuff I shot with flamethrowers in that film was too blown out," he admits. "In this picture, we wanted saturation in the pyro scenes, so we lit the set to balance the flames. You could never do this kind of stuff on a low-budget movie; you'd have to blow stuff up, let it go white and try to print it down. But then your backgrounds wouldn't balance; the only thing lit in the shot would be the fire."

As impressive as the flamethrower footage is an underwater shot in which Harry, having leaped just clear of a fiery blast, must swim to safety beneath burning waves. Recounting the shot, Carpenter tips his hat to Schwarzenegger, who performed the stunt himself. "That shot was done in a tank in San Diego. Completely controllable flame bars were built three inches over the water, and there were safety people just off camera. We had supplemental lighting underwater so Arnold wouldn't turn into a silhouette; we wanted the audience to see that he'd done his own stunt. The flame bar didn't extend too far, and we knew Arnold could swim past it and come up safely on the other side. He was hooked up to a hydrophone so we could hear him,

continued on page 56

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Avid Helps Cameron Cut to the Chase

On a project the size of *True Lies*, organization is everything. Director James Cameron claims to have amassed close to a million feet of printed footage during production, a number that would strike fear into the heart of any film editor. Just to be on the safe side, Cameron hired three experienced editors to trim the picture — Mark Goldblatt, A.C.E., who began work in August; Conrad Buff, who joined the production in October; and Richard A. Harris, who jumped aboard in January. But Cameron's shrewdest decision may have been to heed the advice of Lightstorm Entertainment's head of production, Van Ling, who recommended that the film be cut on Avid's digital non-linear Film Composers.

"I've been working with Jim for about eight years, and I strongly urged him to bring the Avid system into this company," says Ling. "We installed the system in about spring of last year. Before we got the system, we kind of knew that digital nonlinear would be the wave of the future, but we waited a bit to see which systems would be online and working. The Avid was the best system we encountered when we were finally ready to make our decision."

For feature work, Lightstorm purchased several Film Composers, which work at film's 24 frames per second, but the company also invested in Avid's Media Composers, which are set up for 30 fps video work. Ling was able to demonstrate the Avids' versatility while producing the Special Edition laserdisc of *Terminator 2: Judgment Day*, which included footage not seen in the original theatrical release. "We took the existing film and all of the dailies for the additional scenes and edited those together on the Avid," he recounts. "Within the first six months of having the Avids, we had also cut a 22-minute cable special, a trailer, two cable promo spots and a visual supplement and audio commentary for the laserdisc."

Ling notes that he chose the Avid over similar systems because of its versatility and its compatibility with Lightstorm's Macintosh-oriented work methods. "I do all of the computers graphics and in-house work at Lightstorm," he says. "The way the Avid's architecture is set up, I can port graphics files into the system from other programs and insert them into digital cuts. Even on *The Abyss* and *T2*, we were doing a lot of Mac-based stuff on rough tests. If I had done that kind of thing before, we'd have had to either output on paper or come up with some other way to look at the results. Now we can go directly into the Avid system. We can also take out series of frames, do rotoscoping, wire removals and other 'tweaking,' and bring them back into the Avid. It's a good way to do temp composites."

Before editing can begin on a nonlinear system, filmed footage must first be digitized into the computer. Lightstorm had seven assistants digitizing and logging footage as production went along. "That process certainly took a lot of time and effort, but we were richly rewarded later on," Ling says. "The Avid has 13 different resolutions, and we were digitizing at 5E, a fairly high resolution setting. Of course, as you move up in image quality, you need more memory to store the information, and more time for the processor to arrange everything. Certain drive units can only work up to a certain resolution, because the data transfer rates off those hard drives limits your speed. And since we needed to run at 24 fps, that also affected the drive speed."

Ling points out that the conversion of film footage to digital information makes it more crucial than ever for cinematographers to involve themselves as much as possible in the transfer process. "You have to have the confidence of knowing that the material you're editing bears some resemblance to what was shot," he cautions. "It's very important for directors of photography to get involved to ensure that all of the lights are within the proper range, et cetera. Russ Carpenter is very Mac literate, which was a big plus on this picture."

One of the biggest advantages of working with a nonlinear system is that a production can avoid tearing up workprints. "We did produce a workprint, because we knew we were eventually going back to film," Ling says. "The resolution on the computer screens isn't up to the level of a workprint just yet, so we basically used the workprint for reference; if we ever had a question, we'd just pop a reel up on the KEM flatbed and take a look. But we never started cutting workprint until we had a rough cut of the film — which meant that for preview screenings we had a much more pristine workprint that wasn't filled with cuts and splices and dirt."

With *True Lies*, the Lightstorm team became one of the first production companies to fully commit to the Avid system for such a major project. Although the system has been used to cut entire films before, it is frequently combined with more traditional editing techniques. "Most of *The Fugitive*, for example, was cut traditionally, but certain sequences — such as the murder montage at the beginning of the film — were done digitally," Ling points out. "Very few feature films have committed themselves entirely to the Avid, but we decided to jump in with both feet. [Director] Martha Coolidge and her editor, Steve Cohen, have been breaking ground for years on films such as *Rambling Rose*, *Lost in Yonkers* and *Angie*, but those are much smaller pictures than *True Lies*, and there wasn't as much at risk. The only way you're going to get acceptance of a system like this is to show that it's viable. The film industry is sometimes reluctant to change; the prevailing attitude is often, 'We've been doing it this way for 50 to 100 years, and it's worked, so why change it?'"

Testimony from the *True Lies* team offers a myriad of reasons to support an industry-wide shift to nonlinear methods. "I first worked with the Avid system on *The Getaway*, based upon the production's request for a very short schedule, and it made me a convert," says editor Conrad Buff. "What I learned from that picture strengthened my knowledge of how to apply the system to something as gigantic as *True Lies*. On this project, we had three editors. But because of the schedule, there was no way we could have reviewed the material, with traditional methods, as thoroughly as we did during the director's cut process. Every outtake was instantly retrievable for Jim, so he could compare any shot that we used to any shot that he thought he might prefer. We could also try alternate cuts on various sequences and hold them without ever tearing apart our workprint. Using a traditional editing process, that would have involved several days' turnaround; with the Avid, it was instantaneous, whether it was a two-shot sequence or 40-shot sequence."

According to Buff, the production might never have made its release date without the advantages offered by the Avid system. "The film's end sequence, in which Harry rescues his daughter, was very dependent upon visual effects. In order to give accurate [shot] counts to the visual effects supervisor and the companies involved, we had to turn over a locked sequence to them very early in the postproduction schedule, so that they would have enough time to complete the shots. If I'd been using traditional editing techniques, there's no way in hell I could have explored the material as thoroughly as I did.

"I personally wouldn't go back to traditional editing methods after doing it this way," Buff maintains. "With digital editing, the finished product is creatively superior, because this system allows editors to experiment a lot more than we ever could have previously. In the past, with film, you'd study the materials, make notes, get feedback from the director and then previsualize the cut you had in mind as well as you could and conform the film as well as possible to match what you'd visualized. Nonlinear technology allows you the indulgence of a whole new approach, in which you don't necessarily have to previsualize anything. The bottom line, whether you're working on a small picture or something with a lot of effects, is that this technology allows you to get through the material much more quickly and produce a better product in the end. And both directors I've worked with using this system have fallen in love with it."

Cameron himself confirms Buff's report. "I had three editors on this movie, which was the same number I used on *T2*," he says. "I love these guys dearly, but as a result of working with the Avid, I probably didn't need all three. Three was overkill, because you can cut so fast on this system. What I used to do in the old days was to suggest some changes, walk down the hall, work with the next guy, suggest some more changes, and so on. By the time I got through working with the third guy, the first guy was done, and I'd start the process all over again. The Avid is so damn fast you just change things right there. In fact, I got so into it I had them teach me how to use it, and I actually made some of my own cuts. That was pretty cool." — SP

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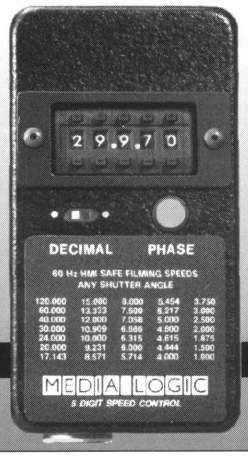

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and if he ran into trouble we would have killed the flames instantly."

The imagery gets even wilder during the film's penultimate climax, in which Harrier jets and a helicopter attempt to intercept the terrorists' nuke-laden trucks as they traverse Florida's Seven-Mile Bridge, a section of the Overseas Highway that spans several of the keys south of Florida. "The highway sequence was a logistical horror," Carpenter recounts with a weary grimace. "The authorities closed off a three-mile section of the bridge. Luckily, we found an old stretch of highway that paralleled the new stretch, and we did all of our major stuntwork there. There was also a section of bridge that had been removed so that boats could get through. Jim saw it and said, "Hey, let's just build our own bridge and explode it!"

The director eventually decided on a more practical approach, and the section of the bridge that explodes onscreen is actually an elaborate miniature. The wreckage of the bridge, however, was built atop a barge in Miami, floated between the existing bridge sections, and sunk to the level of the water.

The Harrier jet footage presented more headaches. On days when the jets were to be used, Cameron and key personnel met at 5:30 a.m. for a military-style briefing on safety and methods. Most of the Harrier aerials were shot with a Vector Vision system mounted in a Lear jet. The trick was to carefully gauge the velocities of the various planes: the faster speeds of the Lear jet were the slowest speeds at which the Harriers could execute combat maneuvers. "We decided to use a zoom lens instead of primes, because the Harriers could only fly a limited number of missions per day, and they were incredibly expensive," Carpenter relates. "Digital Domain did some remarkable enhancement of the footage to bring it more in line with the look of

prime lenses. The drawback of the expense and the potential danger was slightly degraded resolution, but Jim decided to err on the side of safety."

The highway sequence also involved a substantial amount of rear-screen work, which provided background views from the helicopter, the terrorists' vans and a limousine in which Helen and Juno Skinner engage in a backseat brawl. "I'm really proud of how well the rear-screen stuff turned out, because there was so much of it," Carpenter says. "Jim loves to move his camera in an exciting way while shooting rear-screen shots, and maintaining realistic balances was always a primary concern. I liked to overexpose the rear-screen 'exteriors' for a more blown-out, realistic feel. The most difficult challenge was when we used a plate in which the background moved a lot and the brightness levels changed radically within the shot. There were a few scenes in which the rear-screen stuff didn't line up exactly right, but we used them anyway because the action was so good. We can only hope that the audience doesn't notice with all of the other stuff going on."

Carpenter is quick to point out, however, that the sequence's most hair-raising shot — in which Jamie Lee Curtis dangles from a helicopter some 250 feet over the ocean after being hauled out of the limo, on the fly, by Schwarzenegger — was fully authentic. Cameron shot the actress' frenzied reaction himself, from the relative safety of the helicopter's runner. "She was a real trouper," Carpenter avers in a moment of profound understatement. "The cable she was hanging from was strong enough to lift an elephant, but it took real guts to go through with that stunt. I guess Jim's mania was contagious."

The mania reached its zenith during filming of the picture's climax, in which Harry commandeers a Harrier and attacks a Miami high-rise from

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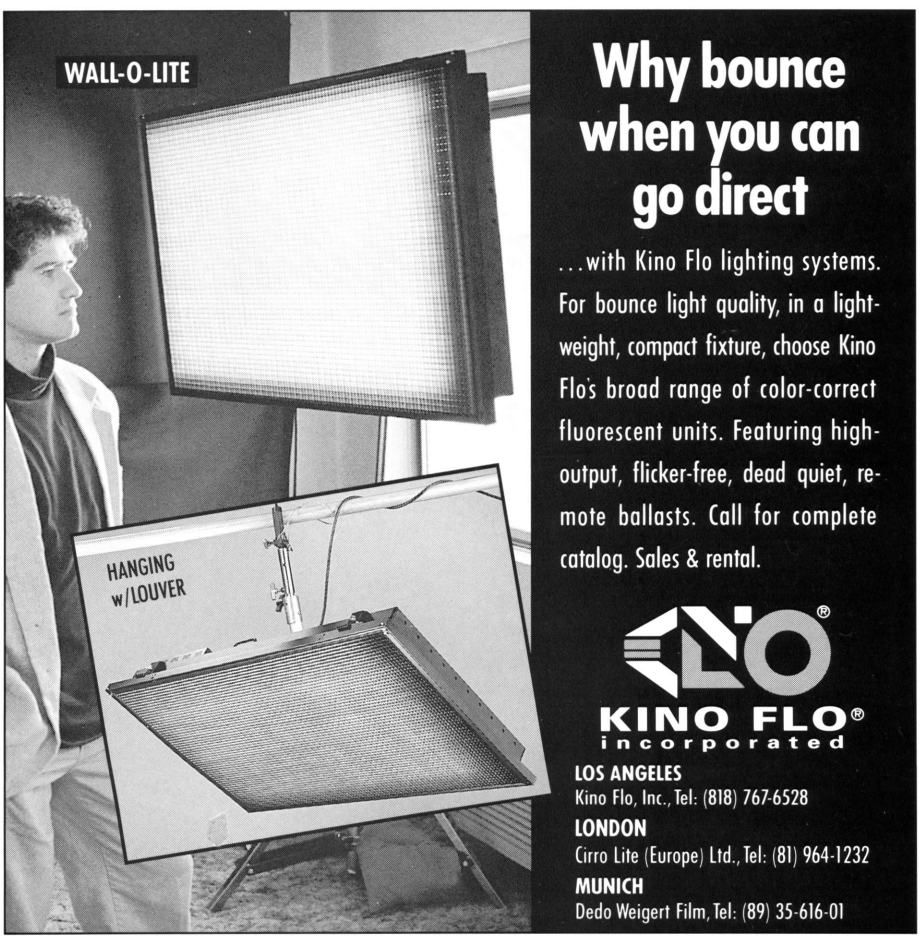
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which Aziz and his remaining co-conspirators are threatening to detonate the last nuclear warhead. In the process, Harry stages a daring rescue of his daughter, who has been taken hostage but helps to thwart the terrorists' plans.

To make the plane look like it was flying in the shots that weren't digital composites, a mock plane was placed on a major gimbal system that was constructed atop a 22-story building in Miami's business district. "The building had to have a small enough area on top so that you couldn't see it when we shot across the plane and down," Carpenter explains. "But that also meant that we had very little room for crew, cameras and lighting. A massive scaffolding structure was erected to support the crew around the plane, and we had to reinforce the top floors of the building to support the weight of everything. For our lighting we had a Lightmaker brute, which has the power of nine 1200-watt HMI units. For fill, we used a little Condor that had very limited movement. As for the cameras, we had a mini-studio in the air. On the perimeter of the building we had a Lenny arm with a camera on it. We used the big yellow crane you see during the climax as a camera platform, and we hung a Technocrane from it in a basket. The Lenny was operating from a level six feet below the crew, and the Technocrane could get anywhere. By cutting between those two moving cameras — one moving on an arm from below the plane, and one moving from above — we could create the illusion of movement.

"Because the weather changed so much, and because of the moving cameras, I couldn't get the lights to where I wanted them ideally. I was very often working from just below the level of the cameras and shooting fill light up into the actors' faces whenever I could. That was a tough go, because we really wanted to serve the camera

movement more than the lighting in that situation. The weather was variable, and the sun was always moving, so we were trying to keep the background correct. A lot of that footage was supplemented with rear-screen projection and TransLight photography."

The sequence reaches its high point when Harry and his Harrier suddenly hover into view outside the building's windows, to the shock of the terrorists. Seconds later, he obliterates the entire floor — and the terrorists — in a fusillade of gunfire. "When Arnold shows up outside the windows in the plane, he's in front of a huge TransLight backing on a stage. There were lots of imperfections in the TransLights, so we helped it as much as we could with the lighting, and Digital Domain smoothed everything else out later. The plane itself was on a hydraulic lift.

"The later scenes in which the plane crashes into the building were also done on stage. I tried to overexpose the TransLight as much as I could to take the curse off the fact that it was a backing. The window glass had a three-stop exposure loss, so I was also trying to find an exposure level that would serve the shot before the glass breaks and then also work for the shot afterwards, when you've got three stops of hot light coming in. Luckily, that sudden burst of light dramatically served the purpose of the story.

"The shot of the plane shooting out the windows was a miniature, and it was combined with interior and exterior shots that were done on a stage," he concludes, a bit winded from the discourse.

Looking back on his trial by fire, Carpenter is quick to praise the efforts of his crew, who toiled beside him every step of the way. "On a project this huge, you need the talents and support of a lot of people. I had to rely upon the crew and the rigging people to a large extent, because they'd seen the sets before I had,"

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he notes. "I'd like to salute a few guys in particular: rigging gaffer Steve Cohagan; gaffer Rick West; key grip Lloyd Moriarty; B camera and Steadicam operator Jimmy Muro; operators Michael St. Hilaire and Paul Babin; and focus pullers Mark Jackson and Chris Moseley. These people were constantly thinking about potential problems and bringing them to my awareness. What got us through the day, though, was knowing that Jim would do whatever it took to realize the movie without compromise. When you have that commitment from the director, you know that you're in good hands. We all had to cross the Himalayas together."

For his part, Cameron remains, as always, an unrepentant adrenalin junky. He maintains that he felt no special pressure to outdo himself after the mega-success of *Terminator 2*, or to make people forget the box-office failure of *The Last Action Hero*, which also combined action and comedy. "I just keep doing it the way I do it and hoping that people will respond to different material and different characters," he says. "When your usual method is to run with the hammer down at all times, you really can't change; there's no headroom! I've been giving 100 percent since the first *Terminator* film. To me, the process would not change even if I did a smaller picture. Some days on this film, I went in and shot a little, quiet dialogue scene with a few close-ups and a couple of laughs. On other days, we'd go in and shoot two Harrier jets and a helicopter landing on a bridge. And anybody who says they're not twisted up in a knot before a day like that is a sonofabitch liar. No matter how many times you do big stuff, you're always apprehensive, because you have a great responsibility to get the work done safely.

"But then again," he concludes wryly, "if the shoot's not exciting, the film's not going to be exciting."

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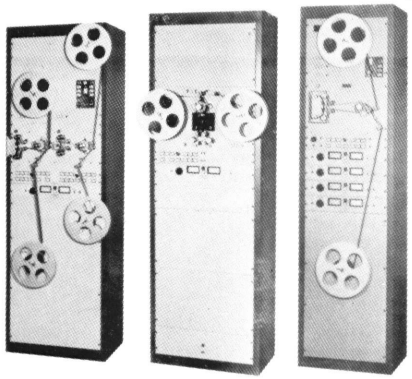

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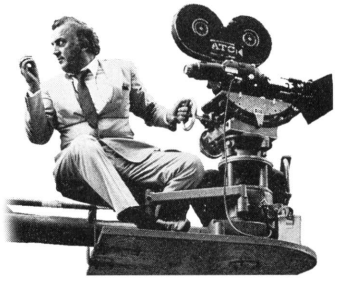

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Packing off to *Camp Nowhere*

Sandi Sissel, ASC brings a lifetime of photographic experience to the task.

by Brooke Comer

Still photos by Richard Foreman and Suzanne Tenner, courtesy of Hollywood Pictures

Warm sun, blue sky and green hills make a perfect backdrop for the summer Berkshires in Buena Vista Pictures' *Camp Nowhere*. Closer inspection reveals the hills to be covered with green paint (a non-toxic dye) and large patches of new sod. Disney Ranch, in Santa Clarita, California, serves as the primary location. The hills aren't normally green in winter, and they sport trees that look suspiciously Californian. But under the direction of cinematographer Sandi Sissel, ASC, the scene becomes an East Coast summer camp.

The film is about a group of adolescents who, tired of the theme camps their parents send them to each summer, band together to form their own "Camp Nowhere." Director Jonathan Prince, who established his flair for adolescent comedy as producer/writer/director of NBC's *Blossom*, works well with his young cast, and with Sissel. "Sandi's up there with the best," he says firmly. "I consider myself lucky to work with her."

Directed by
Jonathan Prince

Produced by
Michael Peyser

Director of photography
Sandi Sissel

As a child in Paris, Texas, Sissel learned the art and technique of photography from her father, who shot for the major press syndicates. Sissel spent hours watching him hand-tint black & white stills from an old four-by-five camera. "Since he worked seven days a week, the only time I could spend with him was in the darkroom. But it was a nice way to grow up." By the time Sissel was in high school, she was shooting for her school paper. And though she majored in music and minored in film at Southern Methodist University, she returned to her true calling at the University of Wisconsin, where she earned a graduate degree in film.

Graduate school gave Sissel a chance to make promotional films for the University as well as educational films dreamed up by professors and funded internally or through grants. She also made documentaries on local Indian reservations and local films about the history of Wisconsin.

After graduation, she taught beginning film classes there, "long before I knew what I

was doing," she says wryly. One of the advantages of teaching was being able to choose filmmakers from the real world to be guest lecturers in her seminars. Among these guests were documentarian Jill Godmilow and avant-garde filmmaker Shirley Clarke, both of whom were were active in the New York scene and helped Sissel make the transition from teacher/filmmaker to working filmmaker. Her timing was right: in the mid-Seventies, the major New York networks were eager to hire women to shoot news.

"The IA was a bastion of male professionals. I thought it would never let me into its hallowed halls," says Sissel, who had been working doing odd jobs, editing and shooting other people's documentaries. But when she came knocking with a reel full of educational films, she was admitted and began shooting news for NBC and then ABC, winning an Emmy for a 1976 special on Queen Elizabeth's yacht, the *Brittania*.

News was an interesting challenge for Sissel, "but not the direction I wanted to follow for the rest of my life." Her real love at the time was political documentaries, which she began shooting all over the world. "Documentaries and second camera work are good training," says Sissel, some of whose favorite cinematographers — Haskell Wexler, ASC, Robby Müller and Chris Menges, among others — are from that world. "You learn to think fast behind the lens."

By the late Seventies, Sissel had broken into commercial work and began to work in

Opposite page: ***Director of photography Sandi Sissel setting up a shot at Disney Ranch.***
Above: ***Having taken over an old hippie commune to create their own self-ruled summer camp, the 13-year-olds take full advantage of the lack of adult supervision.***

Above right: ***Mud (Jonathan Jackson) entreats the camp's lone adult, Dennis (Christopher Lloyd), to help avert a mass exodus of the campers, whose anarchic aspirations have been thwarted by rain. Here Sissel used a warm interior light with cool rain effects from the windows.***

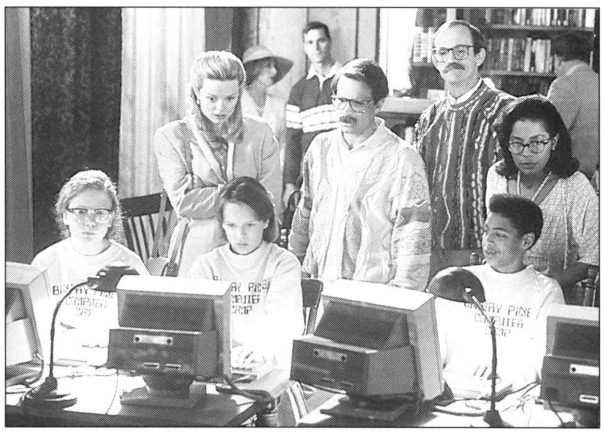
Below right: ***A fake camp staged for the parents for Parents Day and overseen by "Counselor" Dennis (Lloyd, mustachioed man at right), who used the parents' $3,000-per-child fees to rent the commune. This is a mini set within the main cabin set at Disney Ranch.***

35mm for the first time. Again, she was fortunate. "I came along at a time when the women's movement was beginning. Women just a little older than me experienced more discrimination. Not that I didn't have to work hard and fight discrimination, but at least when I was working and fighting, doors were opening." But if doors were opening in Los Angeles, where Sissel based herself to do features, competition was increasing and creating a long line to those doors. "Suddenly I was competing with directors of photography from all over the world. You had to have great work and great luck to break in."

Sissel built up a strong repertoire with award-winning works such as *Mother Theresa*, a theatrically-released documentary, and the feature *Salaam Bombay*, which depicted the plight of India's street children. She also shot Wes Craven's *The People Under The Stairs*.

Sissel worked with Mary Lambert on the interactive film *Double Switch* and Showtime's *Drag Strip Girl*, with Ann Petrie on *Mother Theresa*, on Julia Reichert's documentary *Seeing Red*, and on Ana Carrigan's HBO movie *She's Nobody's Baby*.

Other television movie credits include *In the Company of Darkness*, *Rising Son*, and the Emmy-winning miniseries *Drug Wars*. She also shot series such as *Class of '96*, *The Flash*, and *The Wonder Years*.



"I try not to discriminate between TV movies and features," she notes. "The difference is mostly in the shooting schedules. Anybody would rather have more time, which features allow. But on the other hand, you learn a lot working in a shorter time frame.

"I like to work on a variety of projects," she adds. "After all, we're always telling a different story."

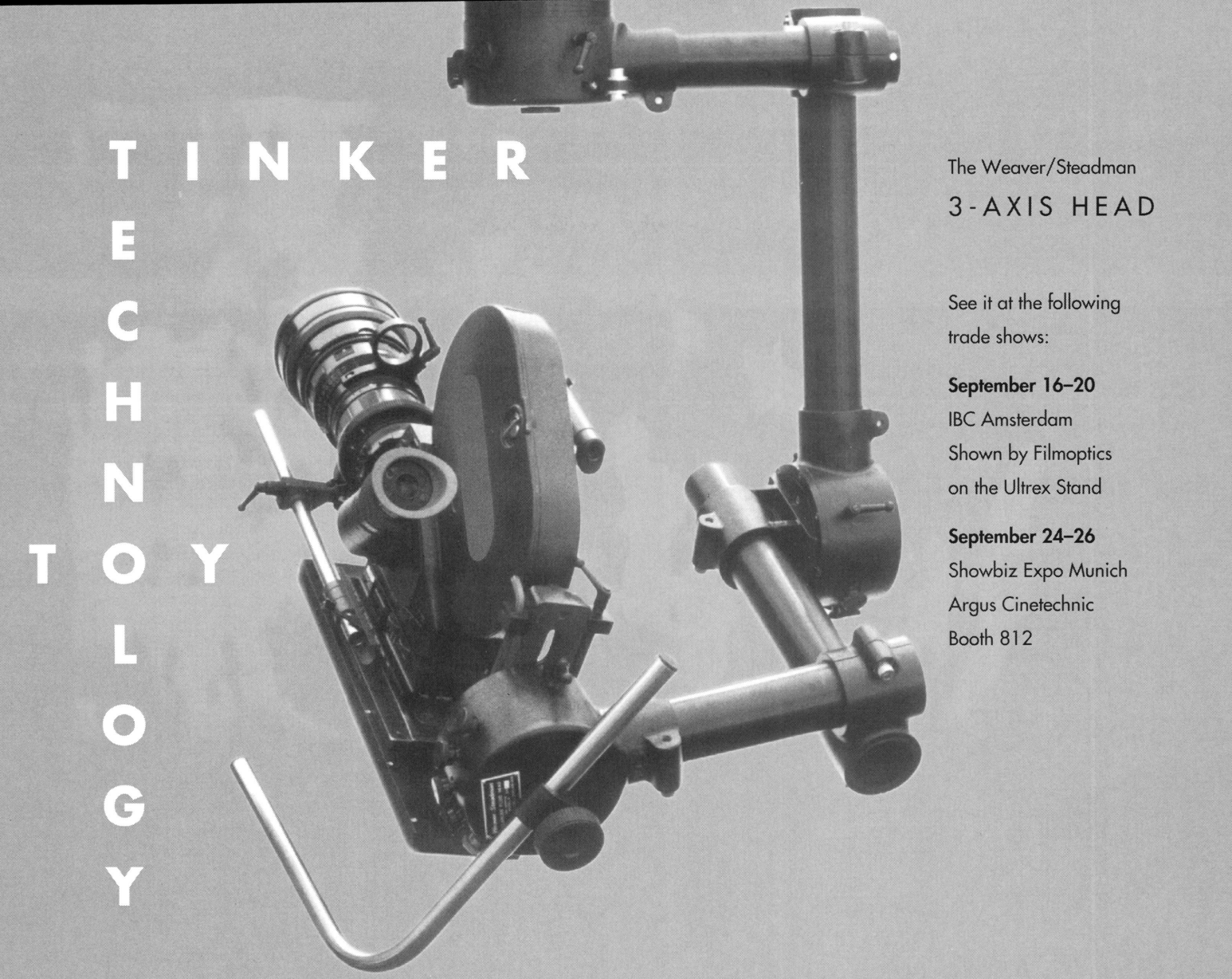
Wes Craven, maven of the macabre (and former college professor), was intrigued by the idea of working with Sissel on *The People Under The Stairs*. The feeling was mutual. "People think he's this guy with fangs," she says. "But he was a college professor, a very bright man." Craven, whose interest was originally triggered when he saw *Salaam Bombay*, had tried to hire her on his previous film *Night Visions*, but she wasn't available. "I was impressed," Craven recalls, "both by the quality of her work and by Sandi herself. She's down to earth and devoted to her work."

He was also curious as to "the slightly different perspective a woman would bring to a project," and found in her a level of compassion "which I hadn't found in male cinematographers. She's a very warm, caring person and that warmth comes across as a visual element on the screen."

People Under The Stairs was a tricky assignment for any cinematographer; most scenes took place in darkness. "The fear of losing light is equated with fear of death," Craven notes. "It's a very difficult task to light a dark film. You have to be able to work at low levels, while letting the audience see what's going on.

"Sandi has stamina — she can lug equipment around and work long hours with the best of them," he adds.

Camp Nowhere director Jonathan Prince shares Craven's regard for Sissel's work. Prince had his own concerns on his first feature, and the cinematographer's insight and experience were appreciated. "Jonathan's a true collaborater in every sense of the word," says Sissel. "He was very open to learning not only from me, but from the operator, production designer and gaffer. He was genuinely interested in learning about the technical side of movie-making." Sometimes, she points out, a first-time director doesn't realize how much time it will take to set up a shot,



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Behind the scenes at the mall where Mud first asks his former teacher (Lloyd, in uniform at far left) for help in setting up the sham summer camp. The mall's skylights necessitated the use of HMIs to balance out the lighting.

especially if the director comes from a three-camera television background. "They think it happens immediately. It doesn't. Jonathan was very patient with our set-up time, and we in turn made sure he had time to tell his story."

And Prince, who was working with a horde of child actors, in turn appreciated their efforts. Children are only allowed to work five and a half hours a day, and since most of the talent was underage, the shooting schedule had to be built around their scenes. "To shoot 22 kids," says Sissel, "you have to be organized. You know that if you're going to shoot an exterior master the light will change constantly. If the child is integral to the scene, you have to learn to shoot out of sequence. You also have to use photo doubles." She and the rest of the crew always kept in mind that the clock was ticking. "We realized that we might find ourselves with a huge scene left to finish long after we'd run out of kids."

As the filming progressed, Sissel and Prince got to know the personalities of the characters and "to anticipate how each child would perform in a scene even before a rehearsal," she says. "We learned to light in a broad setup, allowing enough flexiblity so they could perform freely. We'd get as many focus marks as possible and let them go for it." The children ended up improvising a lot of their blocking spontaneously, giving the film some of its best shots. "We called it organized chaos," she laughs.

Prince's "real forté was drawing remarkable performances from kids," says Sissel. He also let anybody from the crew who asked, including key grip Tim Pershing and gaffer Bruce McLeery, be extras in the film. "It's a real sign of the crews' affection for Jonathan that most of the camera, grip and electrical departments had walk-ons."

To make the best use of time and actors, both of which were in short supply, Sissel ran two cameras almost full time. She'd set up the A camera for the meat of the scene, then go on B camera herself and roam around trying to get extra shots, "anticipating what I thought we might miss. We had to work that way, or we'd never have gotten everything in 43 days."

Compounding the time problem were the short days of mid-winter, when the film was made. "We'd get beautiful morning and afternoon light, but usually the daylight only lasted nine hours, maximum." Sissel tried to get as many masters and big shots done as early in the day as possible. "During midday, when the sun was garish, we'd do double netting and light to match the nicer shades we'd gotten earlier."

In plotting their attempts to turn the California semi-desert into the Berkshires, Prince and Sissel "talked a lot about the look we wanted," Sissel recalls. "Rusty and I tried to open up the film as much as Southern California would allow." Luckily, even the weather cooperated — a rare few days of rain actually helped to lend a

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humid quality to the air.

"We got the rain at the beginning of the production," recalls Sissel, "when the kids were supposed to be in school in Pennsylvania. Then by the time they were getting off the bus at camp, the sun was shining. It was one of those accidents that turned out to be great."

The Disney ranch came complete with a pond, a barn, and woods. But the rough terrain made it hard to lay down dolly tracks. "There were some places where we just couldn't roll dollies, and other places where it would take too much setup time. Every little location move we did was almost a miniature company move," Sissel recalls. "Just moving 200 yards across the ranch was a big deal."

Big crane shots were used to get the opening and closing moments of the film. They were executed with a Chapman Lenny arm and a remote head, so Sissel could start in tight and get a view of the entire camp. For going up and down inclines, the services of operator George Billinger, who doubled as Steadicam operator, proved invaluable. "We wanted to get the spontaneity of the kids' moves, and Steadicam was great for that."

In one unscripted scene, the young actors got caught up in the moment and jumped into Franklin Canyon lake. The genuine kid-originated spontaneity may have given Prince a great scene, but it also gave the hair and wardrobe departments grey hairs.

Sissel also handheld the camera "in a couple of crazy kid sequences," such as the mud Olympics where the actors engage in a slime war, or if a room was too small to set up a dolly.

Sissel came to the project already an old hand at photographing children, having shot *Salaam Bombay* and episodes of *The Wonder Years*. All the children in *Camp Nowhere* had acted before, but none had extensive feature experience. "If you have a lot of preproduction time, you can teach kids to hit marks. But we didn't get them in preproduction and the first weeks of shooting were the learning process. I didn't want to make them learn, on top of everything else they had to memorize, to hit a mark every other second."

Gaffer Bruce McLeery played a key organizational role in support of Sissel. The team often had to shoot three locations in one day, "and rarely spent a full day filming one scene. Most of our scenes were only a half page of dialogue each, so we were always moving." Sissel and McLeery would start pre-lighting another set while one scene was being shot. "We knew we'd lose either the light or the kids soon," she recalls. "It was one of those films. Short actors, short days."

Often, when Sissel knew she only had time to get one more shot done, she'd jump on the camera and start improvising. "Henry Tirl, my focus puller, was a Zen focus master. When you're improvising like that, the focus puller, gaffer and key grip have to be extraordinary. There's no way you can operate yourself without that kind of help."

One week before shooting was scheduled to begin, the big earthquake hit the Los Angeles area, and while the Disney ranch was relatively undamaged, part of the main freeway leading to the ranch was destroyed. For the first few weeks of shooting cast and crew spent four hours on backroads getting to the location, and daily screenings were impossible because the film couldn't be transported back and forth. The Pacific Palisades neighborhood that doubled for the kids' hometown turned out to be the only block in its area that suffered damage. "One house was hanging off the edge over the Pacific Coast highway," Sissel recalls. "The residents were so busy rebuilding afterward that they didn't want any shooting there that would interfere with the repairs."

Sissel chose a Panaflex Platinum and a Panaflex Gold for the production, using the Platinum as the A camera while the Gold, stripped of accessories to make it lightweight, was mounted on the Steadicam or handheld. She used two favorite Primo zooms, mainly the 17.5-75mm. "I used the 11:1 Primo zoom and the 4:1 as my main lenses. They were even fast enough at a T 2.3 for night shooting." Another set of Primo prime lenses was used on Steadicam and handheld shots, while the 200 and 300 Nikkor Primes with a 1.4X Primo extender served on shots requiring longer lenses. Sissel found the zooms crystal clear, "so much so that I often used a one-quarter white ProMist to take off the hard edge."

Since *Camp Nowhere* is an outdoor film, Sissel had to be very industrious about lighting. "When we'd shoot in one of the small cabins or the main cabin, I always lit from the outside. Our main lighting came though the windows and we'd supplement from the inside." She used 12K HMIs, two Dino lamps, and a 20K Fresnel. "We'd often put more than one light on the Condors, get them up into the air, and light through all the windows in the barn, through the skylights and the side windows."

Sissel's theory of lighting, honed from her days as a documentary shooter, is to use logic and go for realism. "In the film, the kids find an old hippie commune that they make into their camp. It hasn't been lived in for years, and any leftover lighting fixtures would be Sixties-style." Sissel also has insight into the themes and motives behind adolescent decoration. "I know kids aren't big on interior lighting. They just open the window and light comes in," she reasons. "We tried to give the film that feeling of single-

source keylighting, even with moonlight."

In past films, Sissel has gone for blue moonlight, "but I felt for this film, the night sky should have a natural grey light." Rather than HMIs, she used the Dinos and a 20K Fresnel on Condors as a key, with one eighth Color Temp orange gel on the lights used for fill, which lent "a little warmth."

Sissel "fell completely in love" with Kodak's 5298, but was disappointed when she was told the enormous order she'd placed couldn't be filled until April, by which time the production was to be completed. "Luckily I got several rolls from Kodak for night exteriors and I was delighted," she says. For outdoor exteriors during the day, she used 5248, and for day interiors, 5293. "When I ran out of 98, I used 96 for night exteriors, which was similiar enough. But for me, the 98 is much improved." She'd always wanted to see richer blacks and more natural skin tones, which the 98 delivered. "I didn't see any red in the skin. Also it was softer, better for lighting adults, though that was something I didn't have to worry about on this film. The contrast ratio is vastly improved in this new stock."

Given *Camp Nowhere's* shaky start, Sissel admits that the production went without a hitch. "It was all a matter of organization," she understates. Of course, there were some problems that even the best-laid plans couldn't control. In removing some non-East Coast trees from the Santa Clarita hills, greensmen left some big holes in the earth — into which one assistant director stumbled during a night setup, putting him out of commission for the duration of the shoot. "That AD had a long rest," Sissel observes, "but the rest of us were on our feet for months. We never got director's chairs with our names on them, because there was no time to sit down."

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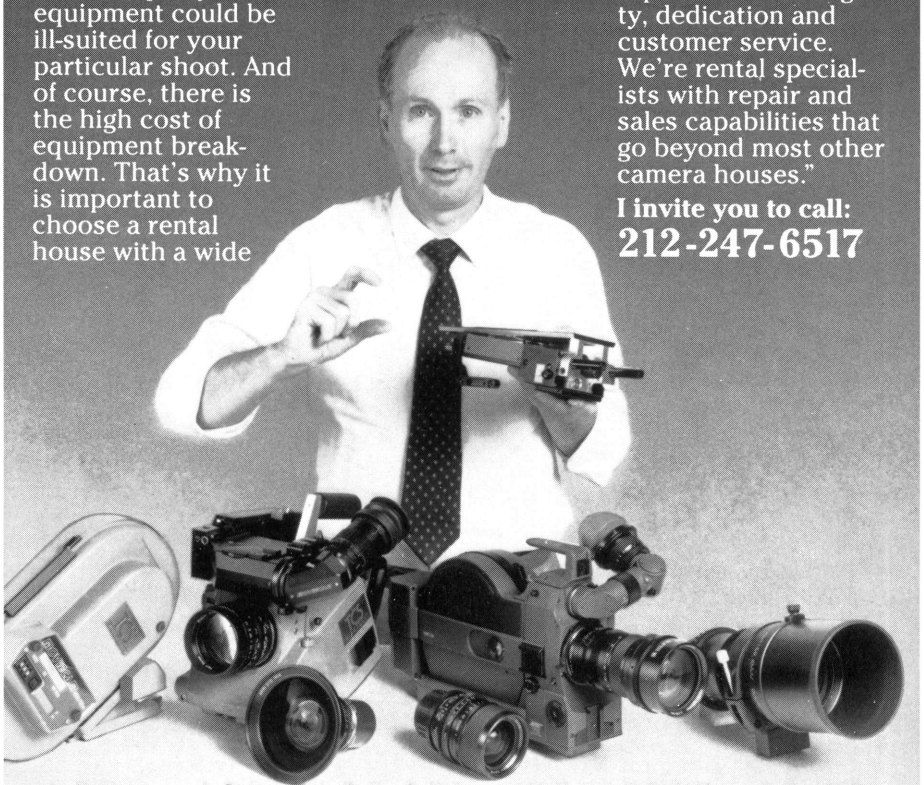

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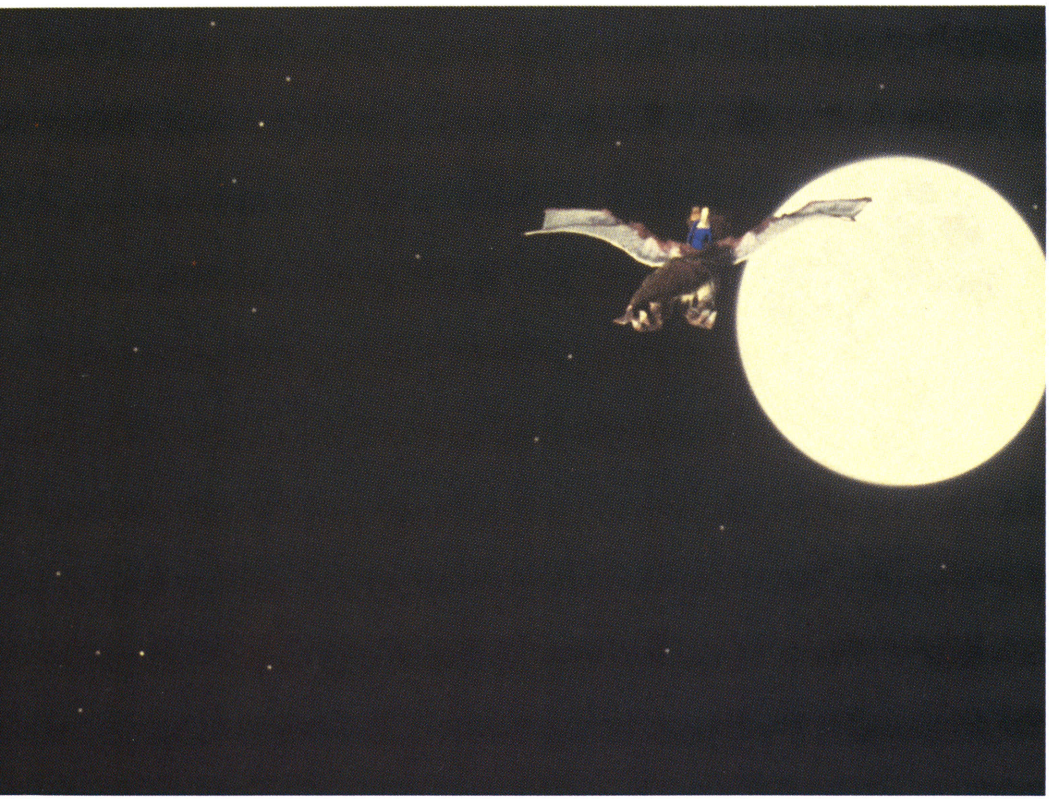


CGI on a Shoestring Budget, Part II

Riding the fence between quality and price requires lots of experience and a little faith.

by Les Paul Robley

*In Part I of this three-part series on digital technology for the creatively endowed but financially humble (*AC *July '94), we profiled the CGI company Full Moon Entertainment and its digital arm, VFX Digital, focusing on the equipment and software used there. Here we take a look at the techniques employed on a typical shot and on Full Moon's upcoming production* Dragonworld. *Part III will cover another of the company's feature productions.*

Most Full Moon effects shots requiring one element of CGI or digital compositing take approximately one week per shot at a cost of $2,500 to $3,500 each. Some of their first composites took a little longer due to an initial learning curve. A shot with more elements — for example, three Shrunken Heads flying around simultaneously — would, in this case, demand three times the scanning cost for each bluescreen element, plus three times the labor and time.

Once the bluescreen element is photographed on 35mm film and approved, the material is broken down in editorial on either one of the two in-house Avid nonlinear editing systems, or on a traditional KEM flatbed. The chosen takes are then sent on 35mm negative to a service bureau for full-range transfer to Exabyte. Due to one-time setup fees, Full Moon prefers to digitize as much as they can per negative roll. A detailed count sheet accompanies the negative with instructions concerning how it is to be transferred, the resolution and file format. Certain scan houses, such as Motion Pixel, perform special calibrations for each particular film stock, theoretically incorporating the dynamic range of the original negative.

After the Exabyte is returned, the tape is downloaded onto the Mac hard disks and pulled into Photoshop. "We look at the shots together and pull the background and bluescreen element and attempt to assign a gamma curve to the background," says Paul Gentry, visual effects supervisor and director of photography at VFX Digital.

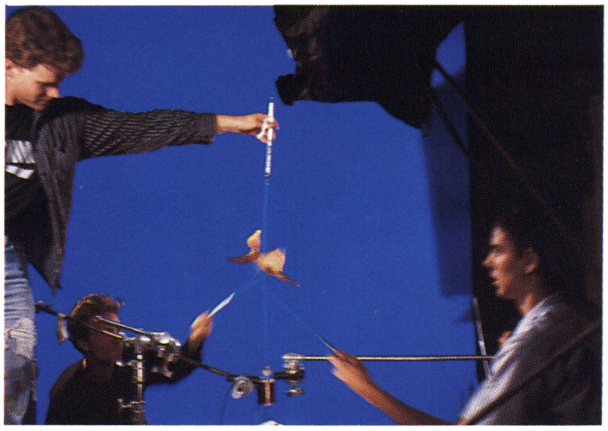
"With digital there are a couple of different ways of going about every problem. You can set your gamma to look like a normal film image. When it's originally received from the scanning company, you're getting a very washed-out-looking image because it's a full-range scan. Now you take that full-range scan and compress it down until it looks right and your bluescreen elements look in balance to it. Then, we knock off a few frames onto a SyQuest and send it over to Motion Pixel. They output a full wedge in terms of showing contrast, gamma, color and density, so you can get an idea where you're at and see if you need to make any adjustments.

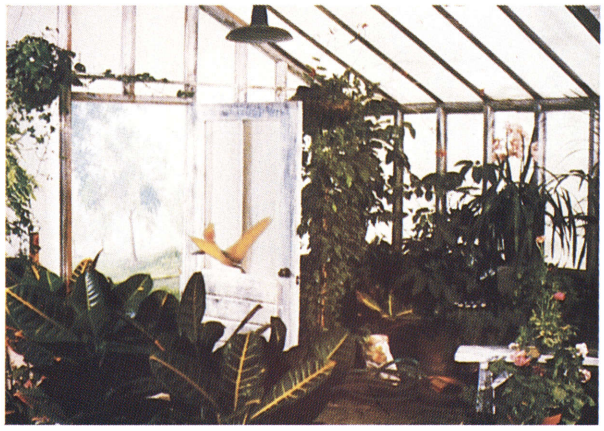
"We use wedges to determine whether our color and contrast is heading in the right

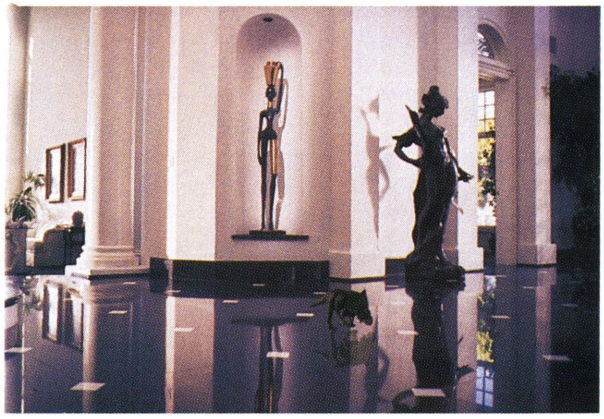
direction," he continues. "Generally speaking, when we set our values for the screen, we go for an image that doesn't look overly contrasty. Contrast is a real sticky point. Film images have a lot more contrast than you sometimes think. You look on the monitor and think it looks very rich and nice, and then you look at the print and realize how much more contrasty it is and how much more detail is being lost. We set our images for a safe range where the contrast is reasonably close to, but slightly less than, what's on the original work print, and then, of course, the bluescreen is matched to that. In outputting this stuff, different houses have different capabilities of changing contrast when you record out, so that's the point of the wedges. Applying curves for video purposes is all well and good. But the problem with applying any curves to a film image is that although they look good on screen, you have effectively narrowed the original dynamic range scan and have to watch out for unpleasant contrast shifts in the output to film.

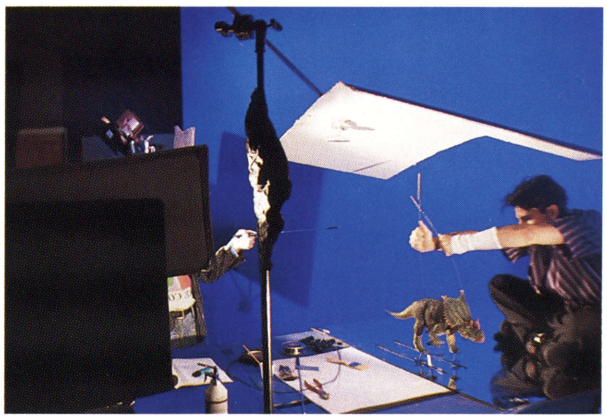
"A lot of screen gamma programs are insufficient to accurately compress range to give you a 'film look' on screen. But we are presently employing a better method for maintaining image quality. We use a special screen gamma program that uses the same RGB curve you would create in Photoshop, but which applies it to the screen image instead of directly to the image file, thus leaving the original files alone. The only changes you might make are color changes in your bluescreen elements since you inevitably will need to make color, contrast and density changes in order to blend them into the background. But these are relatively minor changes, and if the color and contrast changes are made in COSA, you end up leaving those original files alone as well. Thus your output back to film is optimized as you are able to give all of the original image information back. Problem is, the color controls in COSA are not very good, though new plug-ins are on the way — eventually — from John Knoll of Photoshop/ILM fame, who is developing better controls and other goodies for COSA users."

Once the final wedge is approved, digital designers Chris Biggs and Ed Heede perform their miracles in Photoshop, perfecting the mattes and adding any necessary shadows or filter effects. Plug-in filters can be applied directly to any image loaded in Photoshop; a sampling of more than 40 filters includes "lens flare," "mosaic," "emboss" and "wind." Unfortunately, no preview areas are provided for these effects, nor is the ability to incorporate object layering — i.e., saving image elements which can be moved or restacked without affecting areas underneath. Only a few of these filters









Film clips courtesy of Full Moon Entertainment

Opposite page: ***Yowler, a computer-animated character from*** **Dragonworld;** ***the moon was taken from a magazine photo and scanned into the computer.*** **This page, clockwise from far left:** ***A bluescreen element of rod-puppet Madonna the pteranadon of*** **Prehysteria 2;** ***Madonna composited into the scene; bluescreen element of Hammer, a baby chasmosaurus, another character in*** **Prehysteria 2;** ***Hammer composited into background plates, trundling across a well-polished museum floor.***

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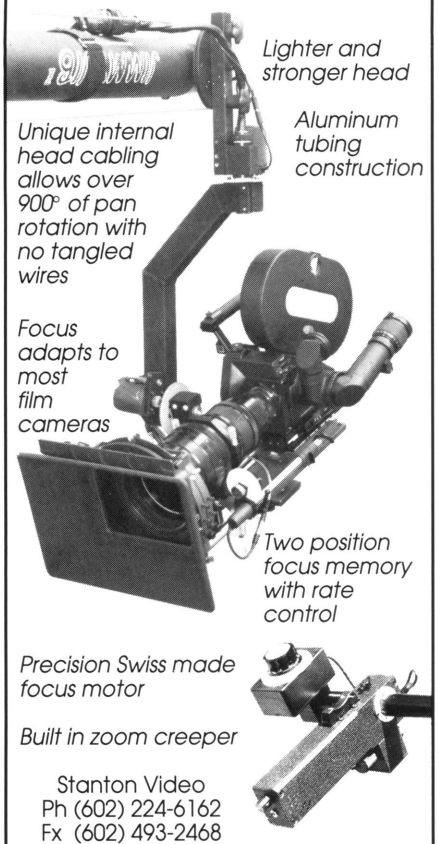

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are animatable through COSA.

With a process called Darken, mattes can be checked for blue spill by deleting the blue background to black or red. Explains Biggs: "We take the green channel and blue channel and calculate the darker elements of both of those and put them in the blue channel. What happens then is that the bluescreen element will go neutral if it's at the proper levels. That's why it's so important to get the right color for the bluescreen. A $700 program called PhotoFusion by Ultimatte gives you a black background rather than neutral, which can be worse since then you have a black fringe to deal with. There's software coming out soon which might make this all a moot point."

Adds Gentry: "PhotoFusion essentially uses commands and algorithms already built into Photoshop anyway, and it is sold for use with still images. Ultimatte also has CineFusion, which is a much more comprehensive bluescreen program for film, but it works only on Silicon Graphics platforms. There's supposedly a Mac version coming out, but that's one of our biggest problems: there are not enough bluescreen tools available on the Mac to simplify it. [See this month's Production Slate for more information on COSA updates for the Mac.] Even COSA AfterEffects is geared more toward video applications, though it can certainly be used for films — as we and others, like Peter Kuran at VCE, Bill Taylor at Illusion Arts and Kevin Kutchaver at Motion Optical, have demonstrated."

Using COSA (Company of Science and Arts) AfterEffects, one can adjust matte opacity, shrink or enlarge elements, blur them (creating a simulated rack focus), add noise to simulate moving grain for static backgrounds, explode or "scatter" objects, create tracking shadows on an alpha channel, and even smooth out an unsteady camera move. "If you have move shake in the background, you select a reference point and COSA will take that reference point and smooth the motion completely until it's steady, eliminating the shake," Heede points out.

Often Full Moon will have lengthy panoramic shots in which the background doesn't move. Rather than scan an entire take from a 35mm motion picture negative, Gentry will transfer isolated images from 35mm still color slides or negatives with a Nikon Coolscan. He then adds noise to each separate element to simulate randomly moving film grain. This way he doesn't have to create every single frame of background. In the film *Beanstalk*, Gentry employed this trick to give life to a static night sky by scanning cloud photos, keying on the blue sky for a matte and then animating in COSA to simulate moving multi-plane cloud patterns.

"COSA can take any kind of effect (motion blur, color, scatter, strobe, flare) and allow you to animate them as variables, such as repositioning an object or flying it through frame," he adds. "But it doesn't have some of the sophisticated color-layer separation tools that are available in Photoshop. So when it comes to problem bluescreens, it's much more difficult to pull a satisfactory matte out of COSA."

Echoes Biggs: "Version 2.0 is painfully slow. You can do a change to the screen and it can take from 15 seconds to a minute for it to update and show that change. A lot of our time is spent staring at the screen and waiting."

Shadows can be created on a separate alpha or matte channel (anything beyond normal RGB or CYMK). Sometimes the original hard shadows can be retained from an exceptionally good bluescreen matte. If the object has been lit from several different directions, the shadows are too diffuse to use. Since Photoshop was designed as a digital photo retouching program, areas can be darkened and

blurred to simulate simple shadows. More complex shadows can be created and tracked in COSA.

"If they could take Photoshop and create a cinema version of it," adds Chris Biggs, "they'd have something on their hands. CineFusion has certain algorithms and technologies that aren't available to Photoshop, which is made to alter one still image at a time."

Once the effects are composited, the elements are sent to the rendering station, which can take from four to 30 hours or more to render, depending on the complexity of the bluescreen layers, color, contrast, re-size and reposition adjustments, etc. The completed shot is then output to Exabyte and sent back to the service bureau for final 35mm film transfer. Very soon Full Moon will be acquiring a better previewing capability — an all-important tool in judging how a shot is shaping up. Contenders include the Avid, the Media 100, VideoVision and others coming online daily. The tendency is to lean toward the Avid, since Full Moon is making a major expansion push, building eight new Avid suites. These files can then be immediately plugged into the postproduction Avid suite environment and immediately evaluated in the context of the movie before outputting to film.

Some of these systems deliver D-2 quality and are starting to enter into the D-1 realm. On the low-end, Apple's QuickTime previewing capabilities are fairly limited, although an anticipated new version of the software promises to be more user-friendly. A low-cost preview in real time is very important to see how mattes fit, but there are very few on the market at this time. Previewing on film looks great, but it is not cost-effective, especially when mistakes necessitate more expensive outputs.

Ed Heede comments: "Production-level full-screen and high-resolution preview solutions are rare at the lower end of the price spectrum. Further complicating matters is the fact that most all of these editing/preview systems are meant for the video market and are 30-frames-per-second, not the 24-frame speed needed for real-time film preview. QuickTime boards from SuperMac, Radius and RasterOps at the low end rely on Adobe Premiere and its slow preview building restraints based on QuickTime [although Premiere does support 24-frame capability]. Hitchcock by Aldus seems to eliminate the bottleneck and is the lowest-priced contender for quick and clean TV resolution previews at about $5-6,000, although its software can't match Premiere for functionality. The Media Translations unit is the most efficient in terms of price/performance, giving rapid TV-resolution previews at Betacam SP quality at the top end as well as multiple resolutions beneath."

CGI For *Dragonworld*

Visual effects supervisor and stop-motion expert Randall William Cook did the design work and character animation for the six computer-generated flying dragon shots (comprising approximately 40 seconds) in Full Moon Entertainment's upcoming *Dragonworld*. His background on such films as *The Gate 1* & *2* and *Ghostbusters* helped facilitate the crossover between the physical world of models and animating in the virtual context of the computer. In fact, CGI is more akin to cel animation in that the animator uses extreme frames, while the computer adds the in-betweens and performs all the necessary move calculations.

LightWave 3D for the Amiga was chosen for the job, since the Video Toaster was the only low-cost platform that could do what they needed for the money. The Amiga had already proven itself for video applications on the TV series *Babylon 5* and *seaQuest DSV*, but unfortunately it behaves like a sloth when it comes to achieving higher resolutions. Would it meet Full Moon's film quality require-

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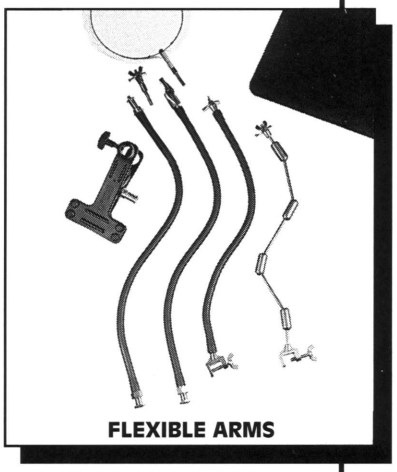

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More shots of* Dragonworld's *Yowler as he escapes from a courtyard. The background is actually a still photo, shot in daylight, that was altered in Photoshop to look like night and then projected onto an element behind the dragon. The tilt of the camera as it follows the dragon's lift-off also gives dimension to the background.

ment, since their video product is repeatedly shown to buyers on 35mm release prints?

"They used a lot of stop motion in the finished film, but for the flying sequences we wanted to try computer effects to see how the Amiga, specifically, would handle a complex living creature," Cook began. "Because we had to animate the characters organically and perform functions of character animation economically, I wanted to get a system that would allow for versatility in character animation. The demonstrations I saw of the [Amiga's] Bones feature encouraged me that at least for certain kinds of limited flight shots, we would be able to get what we needed." As it turned out, Cook was able to get a lot more than distant flight shots. He was able to get quite close.

The Bones feature in LightWave 3D allows users to create complex animation with little effort. Bones are akin to a puppeteer's marionette strings. Wherever the strings move, the puppet is sure to follow. In LightWave, wherever the bone moves, the object contorts itself to follow suit. The bone in this case is a small object pointer that exerts influence over an object's shape. For example, when you make the bone rotate, the object also twists around and rotates.

Like gravity, Bones can have unlimited influence on the object. Two factors dictate how much influence a bone can have: its size and its range. The larger the bone, the more influence it has on an object next to it.

According to Cook, the Bones feature does not match the convenience or versatility of a superior process known as "inverse kinematics. "What you have is a very complex 3-D model with an under-structure like a skeleton, or a stop-motion armature with ball-and-socket joints," he explained. "If you grab a wrist and move it up into position, the whole arm goes with it. But the elbow won't go past a certain point because you've set up parameters or move limits [with the Limited Range setting on the Bones menu]. Before, we had to move each element or bone a little bit at a time independently of each other. With inverse kinematics, you only have to move the last object in a given anatomical hierarchy."

However, Bones is not quite inverse kinematics. It proved to be not as well-developed as programs for the SGI, such as Alias or SoftImage. Due to some of the idiosyncrasies of the Bones technology, the ability to produce a completely convincing living, breathing three-dimensional creature involved certain compromises.

"With the Amiga, we were able to do certain bits of character animation of a complex and realistic creature. The effects were persuasive as far as they went, but the technology just doesn't go far enough to produce unlimited photo-realistic acting and totally naturalistic animals. Bones is very good, but very good isn't good enough for all character animation applications," Cook confessed.

"Bones behave not really as bones, but more like magnets — gravitational attractors which distort a wire mesh rather than move a solid sculpture," he adds. "As a result, the control factor is limited. Imagine a bunch of little magnets that are actually pulling on the wire frames. The trouble with that is, if a pair get too close together, they stretch out and try to touch one another, distorting the image. Due to these and other limitations, we compromised the pantomime and limited what we were able to achieve to conform to the restrictions of the Amiga LightWave technology."

First, a three-foot model of the full-grown dragon was made out of hard urethane in Mark Rappaport's Creature Shop. This was sent to Viewpoint Data Labs in Utah and digitized for the Amiga, then further customized by digital artist Michael F. Hoover, a Video Toaster expert. Even though *Dragonworld* was intended for a direct-to-video release, Cook used Amiga's film resolution of 960 x 1530 and re-sized or reinterpolated the pixels in Photoshop to 1536 x 2048.

The Video Toaster manual claims that the device offers adjustable resolutions up to 3072 x 1920. If one anti-aliased that, it could provide a synthetic resolution of 16K by 12K. But it is not a true 24-bit display device. It internally supports a 16-million-color palette, but outputs color and resolution to the limited NTSC composite video signal. Unfortu-

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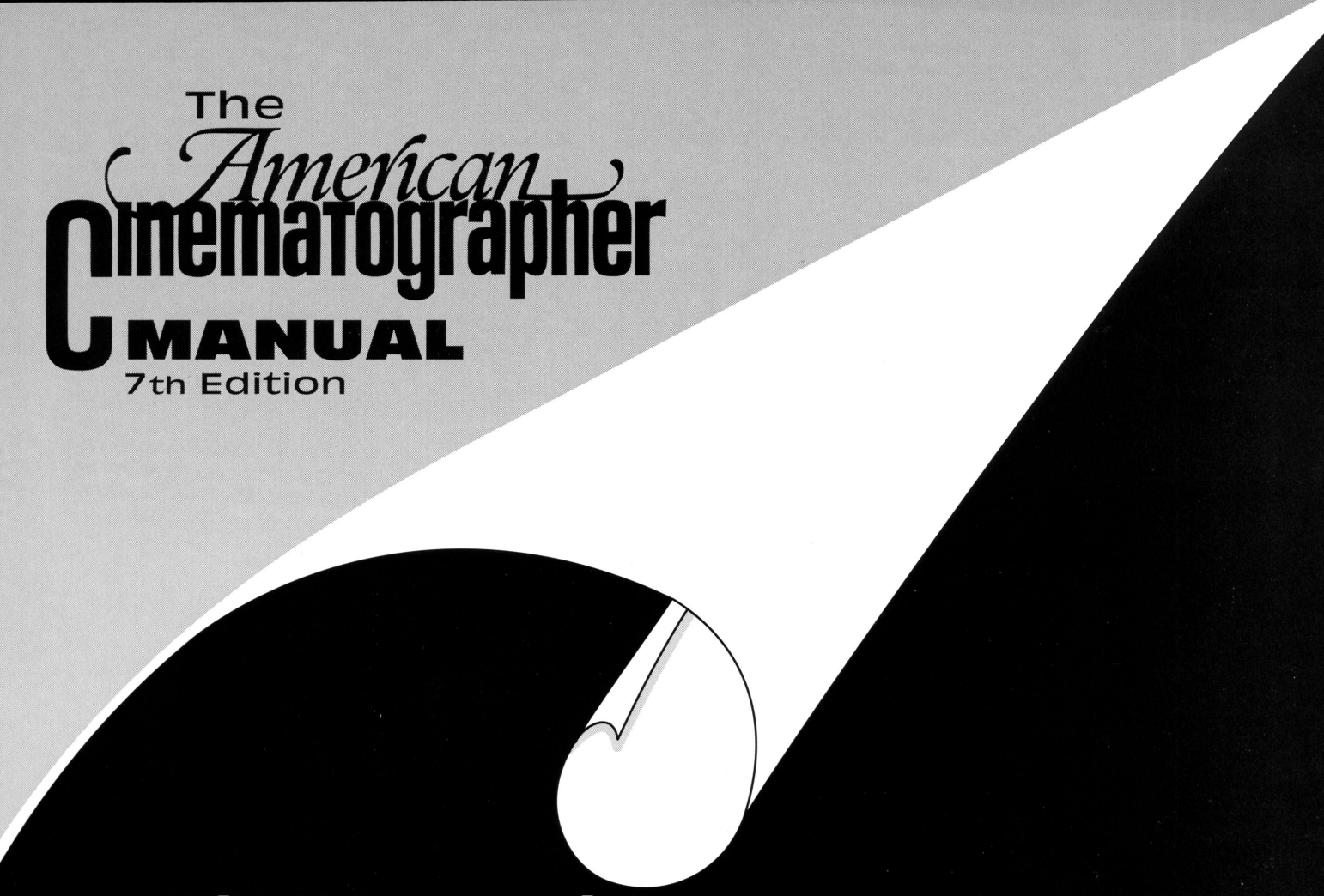

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nately, nobody in Hollywood uses composite video as a broadcast source. To display true 24-bit images for recording onto tape formats like D-2, it is possible to extract the digital quality image from the Toaster by outputting the LightWave animations through hi-res 24-bit cards, such as those available from Digital Micronics (Vivid 24 for $3,000), GVP (EGS-110/24 from $2,500), and the less expensive products from INOVAtronics (AV24) and Centaur (OpalVision) for under $1,000.

"We put more than 100 bones in this dragon," Cook said. "I'd done quite a bit of animation on the Macintosh with Macromind 3D, and used various graphics programs like Painter. I nevertheless found that what we were doing with the Amiga was all new. We bought machines at the end of September of '93 and did our last shot in the middle of March, so it was pretty labor- and learning-intensive.

"Instead of animating shots per se, we animated actions that would cover a sequence. The first shot we animated took a couple of weeks because I was unfamiliar with the program. It took two weeks for a 388-frame shot of the dragon flying. Michael Hoover's modification of the character was an ongoing process and many of our duties overlapped. For example, the creature's maps were still being created while I was animating it."

After the dragon was animated by Cook, it was composited in the Video Toaster and then transferred to Macintosh image files by Hoover using ToasterLink. He and Hoover were basically a two-man department. "Mike built people from standard-issue animation digital dummies and gave them wigs and clothing to which I applied Bones. I changed their faces a little bit so they looked like the people. Then we actually mapped photographs of the actors' clothing and faces onto the people the way we did with the dragon."

It took, on average, one-and-a-half weeks to animate a 300-frame sequence. For a scene in which the dragon rears up to fly away, the background consisted of a daytime photograph of a Romanian village, adjusted by Hoover in Photoshop to look like night. This background was imported into LightWave with a slight tilt upward to add some parallax shift as the dragon lifted off the ground.

This one shot is probably the most representative of the computer's main advantage over traditional stop-motion animation. A superb sense of immensity or massiveness is captured that is very difficult to achieve with small stop-motion models. Ray Harryhausen managed to capture this quality with the Kraken in *Clash of the Titans*, but only because the model was a good five feet tall.

"Since this is something the computer handles well and stop-motion has a little trouble with," says Cook, "it seemed a good idea to accentuate the benefits of the computer and do something that was more majestic and ponderous than you'd want to do in stop-motion," said Cook. "In *The Gate* I had a great big Demon Lord character which was all stop-motion, and again we attempted to move it with an elegance and regality befitting a grand creature like that. In so doing, I spent a lot of time with the teeny incremental movements. The computer, of course, allows you to do it with greater ease.

"The Amiga is wonderful for certain things, but it's still not SGI as far as its ability to make a totally convincing creature. That being said, we were very happy with the level of photo-realism we were able to obtain and the ease of compositing the Amiga gave us. Those features were very valuable. It's a very versatile tool which I wouldn't hesitate to use for simpler applications."

Digital Post Begets Digital Field Recording

by Frank Beacham

In a trend aided by the increased popularity of digital sound and imaging workstations, motion picture production mixers are increasingly using digital formats for location sound recording. The most popular new digital format by far is DAT, the modified consumer 16-bit, two-track cassette format with time-code address track. "There has been rapid acceptance of time code DAT by the film industry," says Mike Riner, senior product specialist at Audio Services Corp. (ASC), a leading supplier of sound equipment to motion picture production mixers. "Most mixers have actively embraced the DAT format. In other cases, the production companies have requested the format."

The adoption of digital desktop workstations in postproduction, Riner says, has worked in favor of digital field recording. "A majority of today's films have incorporated some kind of digital technology with sound or image in post. This has made DAT with time code more desirable."

The Flintstones, Speed, Angels in the Outfield, Wyatt Earp and *A Perfect World* are a few recent productions that used the Fostex PD-2 time code DAT machine, the industry bestseller by far, as their primary field recorder. ASC has sold about 100 of the 150 or so Fostex PD-2 recorders now at work in the United States.

David Macmillan, a veteran production mixer who has used DAT recorders on his last five films, says the motion picture industry "is clearly swinging to digital because it's the better way to go." Though DAT users may still encounter "some quirks," he says, "the format is holding up well."

The owner of a Fostex PD-2, Macmillan says he has had no reliability problems with DAT hardware or tape. His only difficulties were with earlier versions of buggy software which have now been resolved. Those "quirks" still with the machine, Macmillan says, include short battery life (about 45 minutes), "compromised" mic preamps, and a stiff level control pot.

"When I have to do 'run and gun' I go back and use the Nagra," he says. "Digital requires a lot of power. Battery life is short. And the Nagra pre-amps are far better than those on the Fostex." Macmillan is quick to say, however, that the Fostex has been "very, very reliable." During the making of *Speed*, on which Macmillan was production mixer, the PD-2 got a major workout. "I was on that bus for about eight weeks. I was sitting crunched up on the second step of the passenger door well. That Fostex took quite a beating but came through with no glitches."

Acceptance of DAT within the motion picture industry has been "no problem," says Macmillan. "Actually, it is preferred with electronic editing. They can load the DATs with time code right on to the hard disk. A lot of times this speeds things up and cuts down generations."

Adam Boome, staff editor at Lightworks/USA, a leading manufacturer of workstations for digital film editing, agrees. According to him, many users of the Lightworks system have embraced digital sound recording because it offers increased sound quality and greater editing flexibility. "We have even had customers on low-budget films do foley directly into the Lightworks and edit it there," he says.

Of course, DAT is not the only format, just as the Fostex PD-2 is not the only recorder being used for digital location recording of motion picture sound. Production mixer Lee Orloff prefers the Nagra D four-track reel-to-reel digital format.

"I'm a user and proponent of the Nagra D and was the first to use it domestically on *Last Action Hero*," says Orloff. "But I have not been able to use it as much as I'd like. These days, when you talk about format in preproduction, it seems there's a committee that needs to get together and pass judgement on what the format will be."

The reason, says Orloff, is that the format decision affects everyone down the line because everyone in the production process needs compatible machines. "I did three shows in a row for Sony and each of them was done with a different format." Though he is a proponent of the Nagra D format because of its higher (18-bit) resolution and additional tracks, Orloff admits that the machine's higher cost (about double that of time code DAT recorders) has been a factor that has limited the format's user base in film.

"The proliferation of DAT and the readily available studio DAT machines with time code for a very low cost is so universal at this point that everyone has them," Orloff says. "That's not the case with the Nagra D.

"I think the 'D' offers valuable additional tools for the production mixer," Orloff continues. "I would hope it [the 'D' format] has longevity. I just don't know if there is too strong a countercurrent because the industry has been swept into the al-

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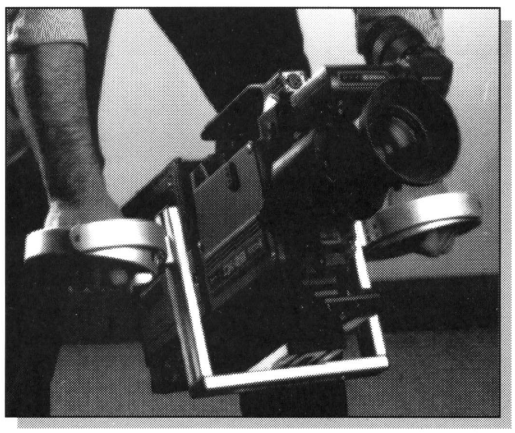

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ternative [DAT] format."

Even though Fostex is about to get new competition from the recently re-designed Stelladat, which is just beginning deliveries in the U.S., some believe that all the digital tape formats are endangered species.

"I'm waiting for the shakeout," says Orloff. "It's going to happen within the next three to five years. I think these are interim digital formats, and by the end of that time all this stuff might wind up being replaced by another format. There's a lot of talk now of getting rid of linear and getting into an optical format. There would be great benefits in film production. . . like having random access to all material. . . if they can just make the transports reliable enough to take out into the field, bake in the sun and freeze on the side of a mountain."

That opinion is echoed by Deborah Harter, vice president of Lightworks. She thinks the days of using magnetic tape for digital location field recording might be numbered. "I suspect in the near future sound might be recorded in the field directly onto optical disc, and those discs could then be played directly into audio and video digital postproduction systems. It's a natural evolution."

In the meantime, as the benefits of digital sound recording are gradually accepted by the motion picture industry, standard location sound equipment packages for production mixers are becoming history.

"Life is much more complicated now," says Orloff. "You can't invest in something that you know is rock solid — like a Nagra — and know you are going to get a return on your investment. The days are over when you will be using that machine day in and day out for 15 or 20 years without a change."

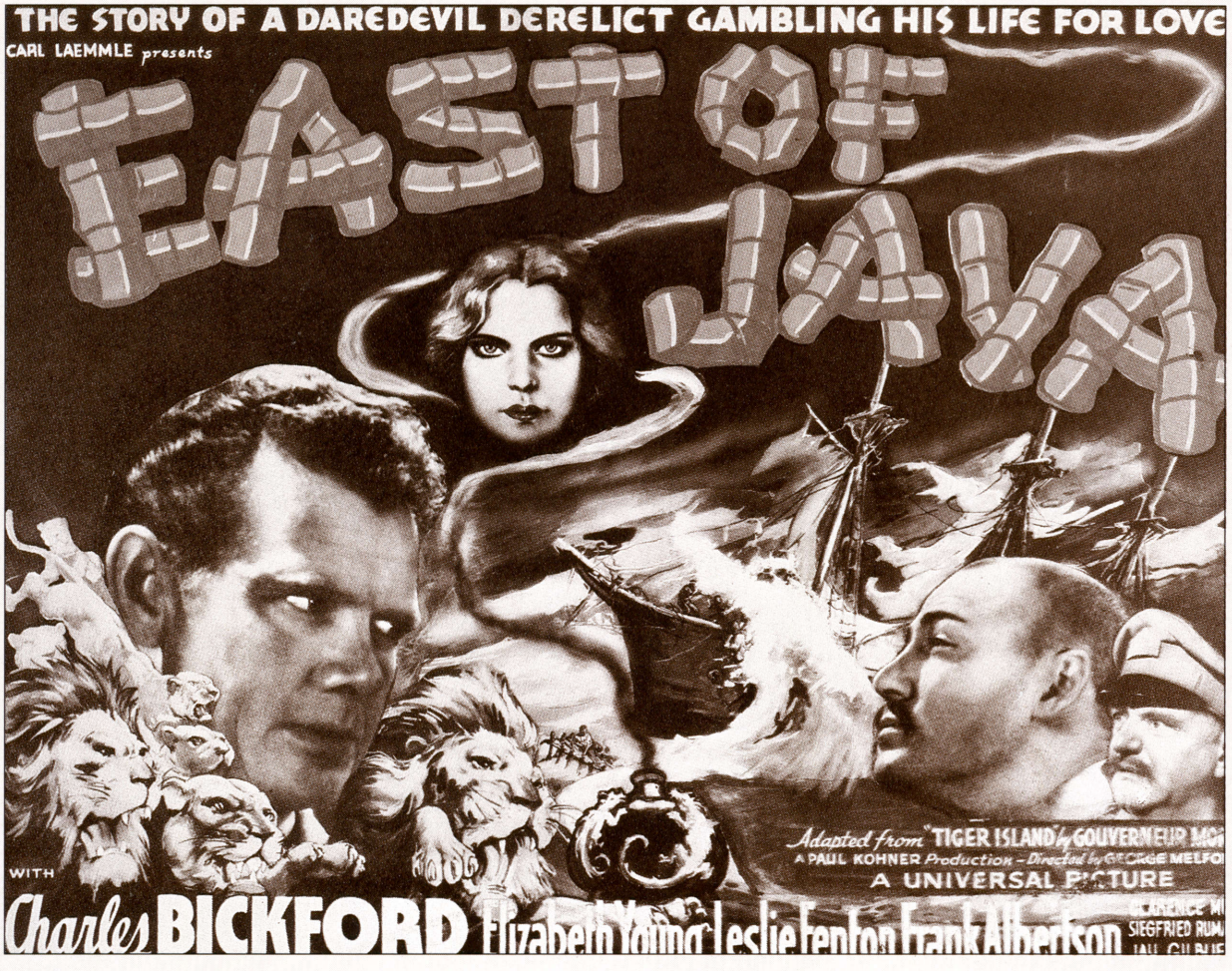
East of Java: Braving a Backlot Jungle

by George Turner

The difficulties of making wild animal pictures are legendary. Much has been said of the privations endured by the *Chang, Trader Horn* and *King Solomon's Mines* expeditions, for example. Yet one of the most exciting fang-and-claw epics — *East of Java* — was made almost entirely within studio walls. Despite the convenience of the backlot, its makers suffered unusual hardships.

The star was Charles Bickford, a rugged individualist reminiscent of Jack London. A husky, red-headed MIT alumnus from Boston, he worked his way across the country as lumberjack, trucker, Chinatown guide, harvest hand, ditch digger and boxer. Then he worked in burlesque and vaudeville, served with the U.S. Army Corps of Engineers during World War I, and became a successful actor and playwright on Broadway. In 1929 Cecil B. DeMille brought him to MGM to star in his first talking picture, *Dynamite.*

While playing leads at MGM, including Greta Garbo's inamorata in *Anna Christie,* the outspoken actor raised the blood-pressures of some powerful people, including William Randolph Hearst, Irving Thalberg and especially Louis B. Mayer, whom he addressed angrily as "a venomous little junk peddler." He was tied to a no-work contract. He bought his way out, but as a Mayer blacklistee he found only supporting roles in major films and leads in low-budget pictures. Then, late in 1934, he signed a two-picture contract with Uni-


THE STORY OF A DAREDEVIL DERELICT GAMBLING HIS LIFE FOR LOVE
CARL LAEMMLE presents
EAST OF JAVA
Adapted from "TIGER ISLAND" by GOUVERNEUR MO
A PAUL KOHNER Production - Directed by GEORGE MELFO
A UNIVERSAL PICTURE
WITH
Charles BICKFORD
SIEGFRIED RUM

Right: ***Charles Bickford and Neil Fitzgerald plot an escape from Simba Sao.*** **Below right:** ***Clarence Muse as the first mate of the*** **Sea Dragon.**

versal. The first, *A Notorious Gentleman,* earned him good notices for his portrayal of a murderous lawyer. The second was *East of Java,* an adventure yarn from Gouverneur Morris's novel, "Tiger Island," adapted by James Ashmore Creelman (scenarist of *The Most Dangerous Game* and *King Kong)* and Paul Perez.

Production began on August 10 under the direction of George Melford, a no-nonsense veteran who had much in common with Bickford. Melford began directing in 1914 and by 1928 had made 75 mostly top-line pictures including *The Sea Wolf, The Sheik, Ebb Tide, Java Head,* and *The Light That Failed.* His career had slumped in 1930 when Paul Kohner, head of Universal's foreign department, hired him to direct the excellent Spanish-language versions of *The Cat Creeps, East Is West, The Boudoir Diplomat* and *Dracula,* followed by *East of Borneo* with Bickford. A tendency to lock horns with management at the majors soon had him making "quickies" for threadbare outfits like Monarch, Pinnacle, Allied, Alliance and Maxim.

Kohner, a Czechoslovakian emigre much respected by Universal's president, Carl Laemmle, had a high opinion of Melford's abilities. He reminded Laemmle that *East of Borneo* had been an enormous success and suggested they reunite Melford and Bickford for another fang and claw epic. Laemmle agreed and let Kohner produce it.

The story tells of Harvey Bowers (Bickford), who flees the British East African port of Simba Sao on Captain Wong Bo's three-masted schooner, the *Sea Dragon.* Also aboard are a romantic American couple, Ann and Larry (Elizabeth Young, Frank Albertson), and a German wild animal trainer, Muller (Siegfried Rumann), with a cargo of jungle cats. Bowers makes a play for Ann.

Learning that Bowers is Nails McGovern, American gangster on the lam, Wong Bo tries blackmail. A typhoon smashes the ship on the reefs of an uninhabited island. Surviving are Bowers, Ann, Larry, Muller and Wong Bo, along with Lee, a Chinese cabin boy (Jay Gilbuena); Lute, a Malay crewman (Fraser Acosta), and Johnson (Clarence Muse), the first mate, a former numbers runner from Harlem. Many of Muller's animals have survived. Bowers forcibly takes charge, enraging everybody but the worshipful Lee. They take refuge in a high cave.

As days pass, Muller, knowing what will happen once the lions have devoured the other beasts, becomes helpless with fear. Lute is killed by a leopard. Johnson falls prey to a lion. Muller, hallucinating that he is back in the circus, goes down among the lions to his death. Wong Bo stabs Bowers, who in turn topples Wong Bo from a cliff to the lions. Bowers makes his peace with the others, who realize his that strength has kept them alive. A searching airplane arrives as the survivors are mak-

ing a hopeless last stand against the hungry lions. Bowers holds the animals back until his friends escape, then succumbs to the lions.

Production wrapped October 10, with several scenes to be completed later. Most of the picture was staged on the Universal backlot. The village of Simba Sao was built at a cost of $50,000 at the edge of Pollard's Lake, an artificial body of water created in 1926 for Harry Pollard's *Uncle Tom's Cabin.* The set, consisting of stores, a saloon, native houses and a dock, is now called Singapore Village.

The *Lottie Carson,* the *Sea Dragon* of the picture, was used in many Universal pictures. Some shipboard scenes were filmed during ten days at sea and a few typhoon scenes were photographed during a heavy squall which blew the vessel ten miles off course. The more violent storm action was staged with a replica on Stage 12, the huge special effects stage designed in 1932 by John P. Fulton, ASC, head of the process department. Intercut was a miniature storm staged by Fulton. A few clips from a similar sequence involving the *Lotte Carson* from the 1932 production *Destination Unknown* were cut in. Some beach exteriors were made on Santa Catalina and Santa Cruz islands.

In 1915 Universal City had established a

Aboard the studio-bound* Sea Dragon: *Bickford, Elizabeth Young, Sig Rumann (center) and Frank Albertson (right).

zoo for use in the jungle dramas and serials that made up a large part of the company's program. The original curator and animal trainer was Charles B. Murphy, a colorful character who also played heavies for the studio. In 1929, when it became clear that "talkies" were here to stay, recording engineers insisted that the noisy zoo must go. The animals were sent to area zoos. Laemmle had the zoo reinstated temporarily for occasional jungle pictures such as *East of Java*. An animal trader, John Swardie, brought additional beasts from Nairobi. Wearing a padded leather suit, Murphy worked with the cats for several weeks, training them to attack on cue.

Pictures involving jungle animals usually mean trouble. A hint of coming events occurred in mid-September while shipboard scenes with the jungle cats were being filmed on Stage 12. Murphy was working with the animals on the deck when a leopard leaped over the rail, panicking the crew. Murphy tried to drive the cat into a "shifting cage" so it could be returned to the deck. The leopard sprang at Murphy and seized his arm in its teeth, inflicting a long gash. Fortunately, Murphy had wrapped both arms in heavy cloth. As he fought free the beast crouched to spring. Bickford, grabbing a pitchfork, ran to Murphy's side, holding the beast off while Murphy got another fork. They drove the leopard into the crate.

During night filming of the typhoon sequence, the ship mock-up was being rocked, wind machines were blowing, lightning arcs were flashing, a lashing torrent of rain was falling, and dump tanks were releasing tons of water to surge over the decks. The animals in their hardwood and rattan cages were being buffeted over the deck, escaping as the cages were smashed (in accordance with the script). Stuntmen doubling as crewmen scrambled to a lifeboat while the crazed beasts were leaping into the turbulent "sea." A leopard jumped into the boat ahead of them. The men drove the snarling animal out, piled in and started to lower away.

The boat was rigged to spill the men into the water to (supposedly) drown. However, a davit stuck and the boat refused to spill. On the second take the boat dumped the men into the water with the frantic animals. Stuntman Art La Forest saw one man floundering helplessly and dragged him ashore. His jaw had been shattered.

The worst came on Monday, September 23, during the making of the climactic escape sequence wherein Bowers is killed by lions. Melford was rushing the filming to free Bickford for a scheduled role at Twentieth Century-Fox with Shirley Temple in *The Littlest Rebel*, his first scheduled film under a long-term contract.

The sequence begins as Ann and Larry

Albertson and Bickford tangle aboard ship.

emerge from the back cave opening onto the cliff top. Wielding firebrands, Bowers holds two lions at bay in the cave while his friends throw down a torch, setting fire to a canebrake. As they climb down a vine, Bowers throws his last torch at the beasts and tries to follow. As the cane fire dies, more lions rush in below. The vine breaks. Bowers falls among the lions as the others escape.

Stunt doubles were used for the hazardous scenes. A steel fence was erected around the area where the lions and stunt artists performed, and a rifleman stood by. Four cameras were set up outside the fence to cover the mauling — two for closeups from different angles, one on the ground for full coverage and one gunning straight down from the cliff top. One of the extra cameras was manned by Kohner's favorite cinematographer, George Robinson, ASC, assisted by Philip Lathrop, ASC. The long shots were applauded when the rushes were screened, but the closer scenes were disappointing because it was obvious that Bickford had been doubled.

Bickford suggested that they should use him and retake the close shots. Melford agreed enthusiastically while assistant director Jack Boland protested vehemently. Murphy warned, "It might be dangerous. That cat hasn't been fed." Bickford laughed, "I like that cat. He's a good cat."

The scene was set up again. Bickford stepped inside with Tarzan, the magnificent 400-pound Nubian lion selected for the closeups. Born at Universal in 1932, Tarzan had worked as a cub in *The Big Cage* with the great wild animal trainer Clyde Beatty, and had been at the Los Angeles Zoological Gardens while the studio zoo was closed. Tarzan rushed toward the actor, snarling and lashing his tail menacingly. Bickford began sweet-talking the lion and extended his hand for Tarzan to sniff. Soon Tarzan stopped growling, rubbed himself against Bickford's legs and began to purr as the actor petted him behind the ears. Then Bickford sat down and wrestled the lion playfully, as he would a big dog. Maneuvering Tarzan within the camera marks, he laid down, looking into the beast's face, and the cameras began turning. Man and beast performed realistically in simulation of a deadly encounter. Melford let the cameras roll until the film ran out. Then the handlers thrust a chunk of raw beef between the bars, luring the lion away while Bickford, near exhaustion, exited to the applause of the crew.

Melford was worried. "Charlie, would you mind doing a retake for protection?" he asked. Bickford obligingly reentered the enclosure with Tarzan, who playfully nuzzled the actor and followed him around. The pair rubbed cheeks for a still photo. As he maneuvered Tarzan into camera position, Bickford, his back to the lion, felt a paw on his shoulder. As Bickford stated later in a press release, "I had a premonition the cat was going to turn on me but it happened so quickly I could do nothing to prevent the attack. All I remember is that I heard a blood-chilling snarl, saw a flash of tawny fur, felt the stabbing pain of the lion's teeth — and then. . . Murphy and. . . Melford had cornered Tarzan and others were helping me off the set and to a chair."

The cameras recorded much more: the lion sank its teeth into the actor's neck about an inch below the base of the brain. As Bickford fell forward the lion clawed the wound. The actor was lying face up when the lion picked him up, shook him, and dragged him toward some underbrush. The sharpshooter, yelling for everyone to stand still and stay quiet, rushed about, trying to get a clear shot at the lion without endangering the actor. Tarzan dropped Bickford on his back and lay across him, as though guarding a kill, refusing to move away. Finally he leaped across his victim and ran into the brush. Bickford managed to struggle to his knees, yelling, "When are some of you sons of bitches going to open the gate and get me out of here?" Melford also was yelling and three men, covered by the rifleman, ran in and carried Bickford to a chair, then to a waiting car. He was rushed to the studio's emergency hospital where Dr. Paul Magill cauterized the wounds and dispatched him to the Hollywood Hospital.

Within 45 minutes of the attack Bickford was on the operating table. The lion's bite had severed the sterno mastoid muscle and infection from the carnivore's teeth and claws was inevitable. Severed nerves left him partially paralyzed.

Bill Bickford, Charles's nephew, recalls being at the bedside when the actor regained consciousness. His first words were, "Buy that sonofabitchin' lion $240 worth of the finest steak

Sloppy Alf's domain. Alf (Charles McNaughton) stands at left.

you can buy."

Why Tarzan attacked is not known. First reports suggested that the attack was triggered because Bickford turned his head unexpectedly or that the whirring of a nearby camera startled Tarzan. In his autobiography, *Bulls, Balls, Bicycles & Actors* (Eriksson, 1965), Bickford blamed it on fear: ". . . I became aware of a breath-holding tension among the men outside the fence. Realizing that these men were desperately afraid for me, my own imagination began to work and by the time the scene was under way, the aura of fear that pervaded the place had infected me. For the first time since I had involved myself in the foolhardy stunt, I was afraid for my life. Men whose vocation it is to work with wild animals hold that the beasts are acutely sensitive to fear, that they can actually smell it. . . The lion, which up to this instant had been instinctively afraid of me, suddenly regarded me merely as 187 pounds of live meat. His eyes flashed green and with no further ado, he sank his fangs into my throat and picked me up like a sack of peanuts."

That night Tarzan inexplicably disappeared from his cage. After a nervous all-night search he was found hiding under the church in the New England street set. He surrendered docilely.

Bickford was incensed to learn that the studio had halted his pay as of the evening before the accident because they "had not had the use of his services that day." He also noted that the hospital room was full of flowers from cast and crew members but none whatever from management, which inquired daily as to when he would be able to finish the picture.

Meanwhile, Universal Newsreel No. 392 (copyrighted September 27), featured "Tarzan Attacks Bickford" in horrendous detail, utilizing footage from all four cameras accompanied by dramatic narration by Graham McNamee and music by Jack Schaindlin. A follow-up in No. 399 (copyrighted October 22), "Tarzan Returns to Zoo," showed Tarzan and another lion obediently pulling an animal feeding cart.

The Hays Office decreed that in the feature

the attack scenes be limited to four fast flash shots. These cuts, one from each angle, are almost subliminally brief, but Bickford's agonized features register unforgettably. Universal slyly kept some of the crucial excised footage in the film's preview trailer.

The studio was delighted as wire services and syndicates carried feature stories and gruesome photo essays, using frames from the film, were snapped up for Sunday supplements. "The result, in spite of the pain to Charles Bickford, will be a great interest in *East of Java* when it is released," Universal Weekly advised exhibitors. "The millions who have read this will want to see the picture — which, incidentally, is filmed with so many thrills anyway, it did not really need this extra unforeseen, once-in-a-lifetime camera event."

Infections and high fever kept Bickford hospitalized for weeks. Stiffness due to severed muscles made it necessary for him to lie in one position only. Odds against his recovery once reached ten-to-one, and doctors predicted that he would lose sight in one eye.

On the morning of November 4, although feverish and accompanied by his protesting doctor and nurse, Bickford returned to Universal to complete several scenes, one of which was with Tarzan. His bandages disguised by makeup and with several sharpshooters standing by in case the scent of half-healed wounds should bring out the beast's savage nature, he kept his nerve. Tarzan sniffed at him and played the scene. After finishing two other scenes, Bickford returned to the hospital.

"Incidentally," Bickford stated in an article he wrote for the Universal Weekly of November 30, "this work was done of my own free will and against the doctor's orders and the studio's wishes. . . Just in case anybody harbors such a thought, there is nobody to blame for the accident. If I am prepared to work and court danger in wild animal pictures I am also prepared to take the consequences if anything goes wrong. If I didn't want to work with wild animals, no director or producer could induce me to do so." Surprising talk in an industry where lawsuits are a daily dose!

Darryl Zanuck, who wanted Bickford for *The Littlest Rebel*, ordered David Butler to shoot around Bickford for a week, hoping he would be recovered by then. There was a second week's grace, and a third and final extension. Despite a persistent fever and against his doctor's orders, Bickford insisted on reporting to work before the deadline. The doctor and a nurse insisted on accompanying him. At 8 a.m. Bickford checked into his dressing room at Movietone City, plastered his swollen and discolored neck with makeup, and got into his Civil War costume. An assistant director took one look at him, hurried away, and returned with Zanuck, who sent him back to the hospital. Universal, feeling responsible for the delay, sent Jack Holt to Fox to replace Bickford. Weeks later Bickford returned to Zanuck's office, where he was treated cordially. Finally Zanuck indicated the scarred neck and said, "You're through as a leading man, you know." The contract was scrapped.

East of Java was released in December. The advertising carried a note: *To our patrons: We are happy to report that Mr. Charles Bickford, who was seriously bitten in the neck by a lion during the making of this picture, has recovered completely.*

The completed film is an excellent example of a type of production now virtually extinct: an exotic adventure made almost entirely in the studio. Any verity that might have been gained by using actual locations is compensated for by the advantages of having the settings and atmospheric effects tailored perfectly to the action. The studio settings are superbly lighted and sometimes enhanced by expert matte paintings and composites by Russ Lawson, ASC and Jack Cosgrove, ASC. The 60-foot cliffs, which were constructed of hydrocal within a natural canyon and included a push-button controlled waterfall, were properly dressed with jungle vegetation and surrounded by a man-made swamp and jungle. Night-for-night photography aboard ship and on the "island" simulates moonlight with an artistry that had become almost a trademark with cinematographer Norbert Brodine, ASC.

Matching the visuals is a fine score by music director Franz Waxman, who assigned additional scenes to Heinz Roemheld and Clifford Vaughan. For the typhoon sequence, Waxman adapted "Orgy of the Spirits," a stirring composition by Alexander Ilyinsky (1859-1919), an obscure Russian composer.

Bickford dominates the cast as a man audiences initially hate, later regard with grudging admiration, and eventually mourn as a hero. No one could have done this difficult portrayal better. English actor-director Leslie Fenton, in an effective makeup by Otto Lederer, is fine as the scheming Chinese captain.

The brilliant actor-composer-singer-musicologist, Dr. Clarence Muse, usually wasted in minor roles, makes the most of one of the better parts offered to a black artist in the Thirties. In addition to a sympathetic performance encompassing humor and tragedy, he sings two of his own compositions. One, a spiritual, plays unforgettably on the soundtrack during a moonlit sequence as Muse climbs down to fill a water cask and is killed by lions.

Also memorable is Siegfried Rumann, his face marred by deep claw marks (makeup by Lederer), as a famed German animal trainer whose bravado rapidly descends into insanity because only he is fully aware of the horror to come. His big scene comes when, hallucinating that he is in the circus arena among his trained cats and imagining the blare of a circus march and the applause of the crowd, he strides majestically to his doom among

Bickford and Young look after the injured Jay Gilbuena.

the lions, cracking his whip and firing his blank pistol. The circus music was specially written by Vaughan and the sequence is superimposed with circus footage from *The Big Cage*. Another grimly effective scene, marred somewhat by poor voice dubbing, has Fraser Acosta playing his lute and singing, unaware he is being stalked by a leopard.

Despite the popularity of *East of Java*, Melford did not get another assignment for two years. When he did it was to co-direct, with "quickie" specialist Harry Fraser, a cheaply made serial, *Jungle Menace*. It was his last directing job; he had too many enemies in high places. Eventually, he resurfaced as a bit player and extra in many films. He died in 1961.

One of a growing number of actors to fall under the Mayer curse, Bickford continued for eight years as a heavy at major studios and a lead at Monogram and Republic. His hair was turning white in 1943, when Fox hired him to portray the kindly Pyremale, Dean of Lourdes, in *The Song of Bernadette*. He received an Oscar nomination, was nominated again in 1947 for *The Farmer's Daughter* and in 1948 for *Johnny Belinda*, and was much in demand for the rest of his life. He died in 1967.

CREDITS

A Universal *picture presented by* Carl Laemmle; *directed by* George Melford; *a* Paul Kohner *production; screen play by* James Ashmore Creelman, Paul Perez; *based on the story "Tiger Island" by* Gouverneur Morris; *cinematography,* Norbert Brodine, ASC; *photographic effects by* John P. Fulton, ASC; *music by* Franz Waxman; *film editor,* Maurice Wright; *technical advisor,* William Kummell; *additional cinematography,* George Robinson, ASC, *assisted by* Philip Lathrop, ASC; *matte effects,* Jack Cosgrove, ASC, Russell A. Lawson, ASC; *optical effects,* David S. Horsley, ASC; *additional music,* Heinz Roemheld, Clifford Vaughan, Alexander Ilyinsky; *songs, "I Go Congo" and "I'm a Spiritual" by* Clarence Muse; *make-up artist,* Otto Lederer; *production manager,* Maurice F. Murphy; *assistant directors,* Jack Boland, Edward Muhl; *sound supervisor,* Gilbert Kurland; *costumes,* Vera West, Larry Judge; *set decorations,* R. A. Gausman, Harry Grundstrom; *property man,* Elton Burns; *animal trainers,* John Swardie, Charles B. Murphy; *script clerk,* Freda Rosenblatt; *production secretary,* Gertrude Frye; Western Electric *recording. Running time,* 72 minutes; *released* December 2, 1935.

Harvey Bowers, Charles Bickford; *Ann,* Elizabeth Young; *Larry,* Frank Albertson; *Captain Wong Bo,* Leslie Fenton; *Hans Muller,* Siegfried Rumann; *Lee,* Jay Gilbuena; *Johnson,* Clarence Muse; *Resident,* Edgar Norton; *Lute,* Fraser Acosta; *Sloppy Alf,* Charles McNaughton; *Messenger,* Ray Turner; *Derelict,* Torben Meyer; *Go-Between,* Neil Fitzgerald; *Sergeant,* J. P. MacGowan; *Pilot,* Vernon P. Downing; *Hunter,* Wyndham Standing; *Boer Traders:* Ivar MacFadden, Adolph Milar; *Englishman,* John Ward; *Natives,* Katherine Jackson, Al Logan; *Crew of the* Sea Dragon: James B. Leong, Chester Gan, Sam Labrador, Pete Kotsanaro, Claude Martin, John Casey, Malay Clue, Jim Spence, John George, Toni Mori, Suran Singh, Bernard Siegel, Art LaForest, Joey Ray; *Stand-ins:* Ray Burgguss (Bickford), Archie Arnett (Muse), Dave Campbell (Albertson), Helen Valkis (Young).

The author is much obliged to Bill Bickford, Phil Lathrop, ASC, Phil Riley, Universal City Studios, and the Academy of Motion Picture Arts and Sciences.

New Products

compiled by Marji Rhea

Animation System Upgrade

New features of Version 2.0 of the ElectricImage Animation System include fully animatable deformations, sync sound animation, and 3-D plug-ins such as Mr. Nitro, lens flares, particle systems, and mesh objects. Deformations enable users to arbitrarily scale, shear, twist, taper, bend, bulge, ripple, linear wave, Bezier, and freely stretch models. The deformations remember every step of the process, allowing for character animations, repetitive motions, etc. Version 2.0 reads QuickTime and any AIFF sound file, and its sync sound animation feature can import an unlimited number of soundtracks, memory permitting, from popular sound editing programs available or directly from the Macintosh Microphone. Soundtrack waveforms are displayed directly in the project window, allowing for precise synchronization between the animation and the sound. Sync sound animations can be previewed in real-time and saved in QuickTime format for use in any QuickTime-savvy program.

ElectricImage plug-ins, including Mr. Nitro, lens flares, particle systems, and mesh objects, can create and animate in 3-D. The included Projector application can read and use most of the plug-ins for Adobe Photoshop 2.0 and compatible programs.

Also new to Version 2.0 are motion-blur techniques such as motion vector, frame multi-sample, and point/line, as well as summation texture mapping.

Also included are rendering features such as flat, wireframe, and Gourand & Phong shading; animation features such as object cycling, repeating channels, and hierarchical animation; interface features such as interruptible drawing and QuickTime support; shaded views that show lighting changes instantly; motion paths; adaptive anti-aliasing; light effects such as glows, fogs, and lens flares; a fully integrated transporter and Mr. Font.

For information: Electric Image Inc., 117 E. Colorado Blvd., Suite 300, Pasadena CA 91105, (818) 577-1627, FAX (818) 577-2426.

3-D Animation Software Upgrade

Version 4.1 of Wavefront Technologies' Visualizer 3-D animation software for Silicon Graphics workstations offers a boost in throughput, increasing overall production and test rendering speeds, depending on scene complexity, object complexity and rendering algorithms selected. Productivity increases result from object caching in the Image renderer to eliminate frame-to-frame reloads, and integration of Kinemation files to eliminate object interpolation requirements.

Visualizer provides interactive modeling, animation and rendering tools in an open environment that allows the user to incorporate varied datasets and complex animations. The system is particularly well-adapted to the diverse data import requirements of industrial visualization, and to the high-end image production demands of electronic games and other interactive applications.

Visualizer works with a set of special-purpose product modules that are interoperable between Wavefront's Visualizer and Explore animation systems. These modules include Dynamation for interactively creating realistic images of dynamic events, and Kinemation for creating synthetic actors with natural motion using inverse kinematics and SmartSkin technology. Data Visualizer is an interactive data viewing and visual analysis module which integrates diverse data types generated by a variety of CAD, Finite Element Analysis (FEA), and Computational Fluid Dynamics (CFD) systems into the Visualizer system.

For information: Wavefront Technologies, 530 East Montecito St., Santa Barbara, CA 93103, (805) 962-8117, FAX (805) 963-0410.

FX Package Upgrade

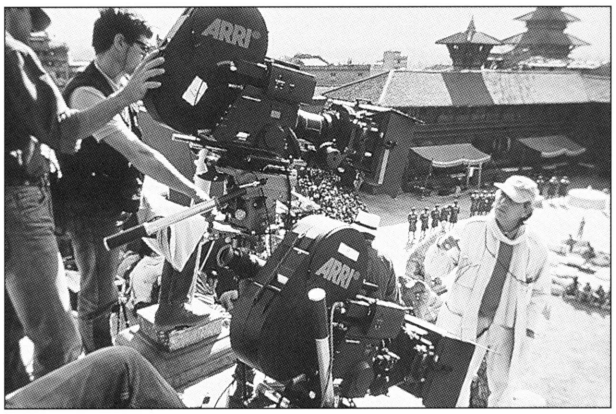
CoSA has released three new products for its After Effects professional compositing, motion graphics and special effects package. The After Effects for the Apple Power Macintosh Platform, the After Effects Rendering Engine, and Effects Pack, vol. 2: Keying Effects. The entire After Effects product line now ships with both Macintosh and Power Macintosh versions.

The Apple Power Macintosh version offers two to four times the speed of the Macintosh-only version. Macintosh-only users who can't yet use the Power Macintosh version can download the bug-fix patching application for free from the CoSA division areas on America Online and AppleLink. The application will convert After Effects 2.0 into the 2.0.1 Macintosh-only version.

The After Effects Rendering Engine is a cost-effective way for the After Effects user to put idle Macintosh and Power Macintosh CPUs to good use. Once a composition has been completed and is ready to be rendered, final output frames can then be put on a different machine or machines running the rendering engine. This frees up the primary After Effects workstation for continued editing, and ensures that neither machine nor operator has to sit idle. The rendering engine also comes in multi-pack units.

After Effects 2.0.1 and the After Effects Rendering Engine 2.0.1 for the Macintosh require an Apple Macintosh II computer or greater with a floating-point-unit math-coprocessor (FPU, System 7.0 software or later, the QuickTime 1.5 system extension or later (included) and at least 8Mb of RAM (20+ Mb recommended). After Effects 2.0.1 and the After Effects Rendering Engine 2.0.1 for

VISIONARY

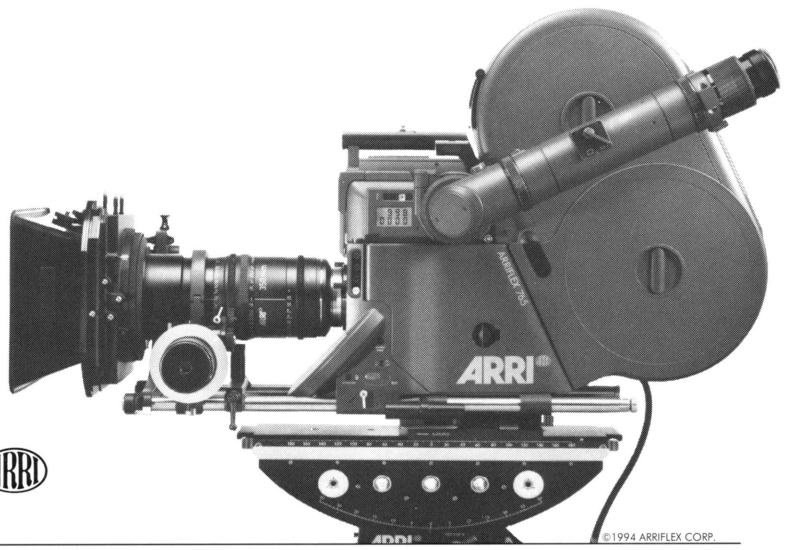


LITTLE BUDDHA

"I woke up every day thinking I would take another step toward the meaning of life, and that was a wonderful experience. It's a journey you never complete.

Vittorio Storaro, ASC, AIC

It is one thing to do research and find a better way to record an image; that is something you do consciously. It is an entirely different experience when you discover something new at the moment of photography.
Filming *Little Buddha* made me more conscious of that."



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the Power Macintosh require System 7.1.2 or later, QuickTime 1.6.2 or later, and at least 16Mb of RAM (24+ recommended.) Both also require an 80Mb hard drive (500 Mb+ recommended.) Two monitors are recommended with using After Effects.

Effects Pack vol. 2: Keying Effects is a package of plug-in special effects that augments After Effects version 2.0 or higher. The After Effects Rendering Engine is a stand-alone application that renders projects that have been created in After Effects 2.0 or higher.

For information: CoSA, 411 First Avenue South, Seattle, WA 98104, (206) 628-4526, FAX (206) 343-4240.

Gaffer Accessories

A former gaffer has started the Black Bag Co., which designs and manufactures durable, lightweight and water-resistant holders for the various equipment used in the industry. They are currently manufacturing tool pouches, tool harnesses, flashlight holsters, meter cases, make-up, hair and costume smocks, nail cases, and tape holders.

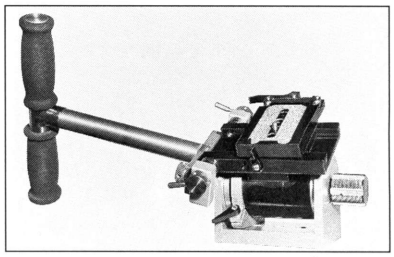
For information: The Black Bag Co., P.O. Box 15633, North Hollywood, CA 91615-5633, (818) 760-3456, (800) 255-2477, FAX (818) 985-3696.

Optical Image Stabilizing Lens

Canon's J14ax17B VAP Optical Image Stabilization lens is the broadcast industry's first and only broadcast quality optical image stabilizing lens and uses Canon's Vari-Angle Prism technology. The system avoids the negative characteristics of traditional gyro-based stabilizing systems. The lens features Canon's IF technology and has a zoom ratio of 14x, with a focal length of 17-238mm in the size and weight of a standard ENG broadcast lens.

The lens was recently used in a helicopter shoot for Ohio University by producer/director/cinematographer Mike Barnes, who used it on a Sony BVP 7 camera mounted on a Tyler nose mount. He reports that he was able to use 80% zoom capacity at altitudes up to 6500 feet, and at speeds up to 80 knots. Because of the unit's lightweight and slim design, the nose mount doesn't have to work so hard. "With a higher tilt speed, you can wait longer to start tilting and the tilt can keep up with the helicopter."

For information: Canon USA, One Canon Plaza, Lake Success, NY 11042.



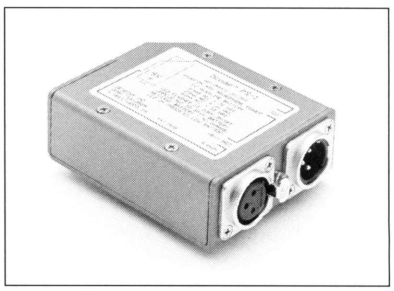
Small Dutch Head

NCE of FLA's Hydrofluid Dutch Head is designed for film and video cameras up to 35 lbs. It weighs seven lbs., has a panhandle, and is complete with balancing quick-release Lissand/O'Connor top plate. The unit has adjustable tension, positive tilt lock, and adjustable holes for balancing on the base plate. The new "T" handle eliminates the need for two handles and can be used in the vertical position for cameras with a short eyepiece, or in the horizontal when used with cameras with video monitors.

The balancing plate can be moved 90 degrees to become an adjustable wedge. The quick release can also be rotated to give the user any combination necessary.

Due shortly is a Pan Base to adapt to the dutch head that will provide two tripods in one.

For information: NCE of FLA, Inc., 2025 NE 151st St., Miami, FL 33162, (305) 949-9084/9085.



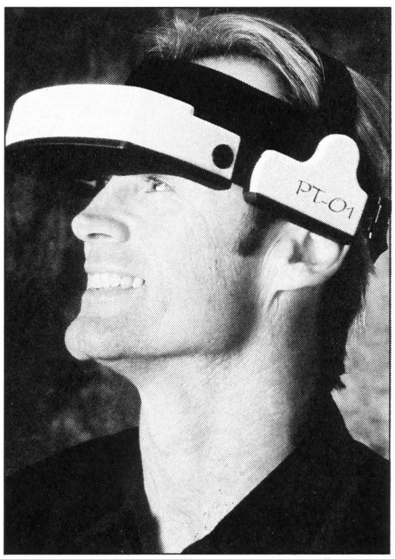
Time Code Stripper, Microphone Power Supply

Denecke's ST-1 Time Code Sync Stripper is a small battery-operated time code sync stripper and time code reshaper. Low-level code can be re-shaped and brought up to a three-volt peak-to-peak level useful for driving most professional equipment. The high output drive can feed sync or time code over long lines, great for concert recording. The ST-

1 features long battery life and an LED indicator which strobes at the sync rate.

Also new is the company's d-Code PS-1 48 Volt Microphone Power Supply. Designed as a low-cost auxiliary phantom power supply, the unit features long battery life with a low-battery LED indicator. The low-noise output will work in the most demanding applications. Automatic power off conserves battery life when the microphone is unplugged. The unit is designed with a small rugged case and features a quick-change batter holder. Battery life, using a 9-volt alkaline battery, is more than ten hours with a 4 mA mic.

For information: Denecke, Inc., 5417 B Cahuenga Blvd., North Hollywood, CA 91601,

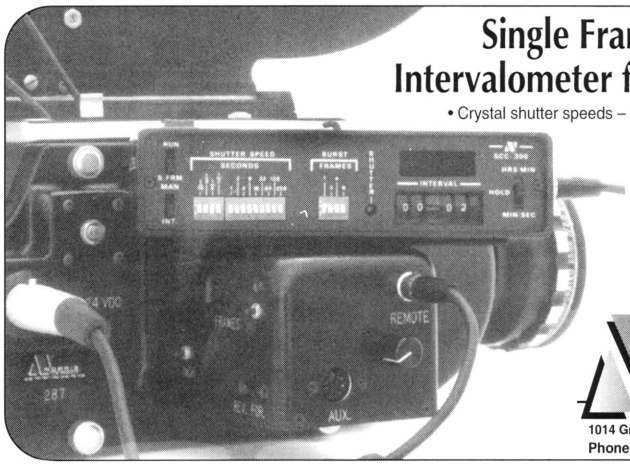


Video Headset

01's PT-01 is a head-mounted display engineered and produced for industry use. Weighing less than 14 ounces, the unit keeps the video image comfortably in front of users' eyes, wherever they turn. The hands-free, full-color display delivers a wide-screen image through precision binocular optics that eliminate eyestrain and fatigue.

Multiple adjustments allow the patent-pending PT-01 display to be positioned by the user for optimum comfort and to maintain visual contact with both the video image and work at hand. The sheltered LCD-based display module is easy to see even outdoors and slides fore and aft to accommodate eyeglasses.

PT-01 is designed for use as a Steadicam viewfinder, as a standard camera viewfinder, for video assist moni-



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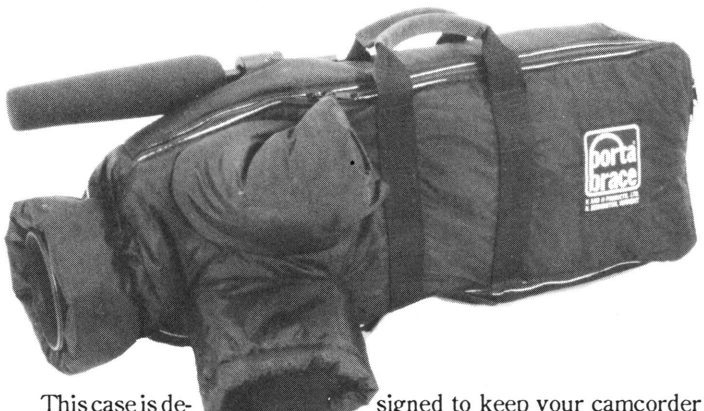

This case is designed to keep your camcorder warm in cold temperatures. It is thickly padded with a high loft insulation material. The interior is lined with mylar fabric to reflect heat back into the camera chamber.

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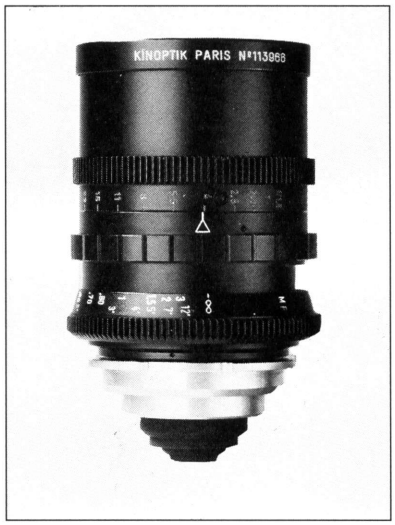
For information: (800) 538-3008.



Smart Lenses

Fujinon has added FIND (Focused Intelligent Network Diagnosis) to its studio Ah and Sh Series lenses. The FIND system provides rapid evaluation of lens electronic and electromechanical subsystem performance. FIND performs a diagnostic evaluation of the major lens components and provides a status indication of each one. It is an ideal tool for preventive maintenance as well as for troubleshooting. The system consists of a circuit board that mounts inside the lens enclosure and can be easily installed and removed by the user. A single FIND system can be shared with all of the user's Ah and Sh Series lenses.

For information: Fujinon, 10 High Point Drive, Wayne, NJ 07470, (201) 633-5600, FAX (201) 533-5216.

Digital Audio Processor

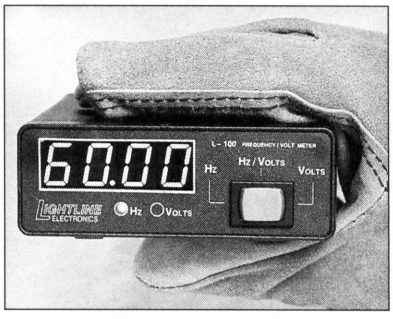
dB Technologies' DSP-driven dB3000 Digital Optimizer used advanced sample rate algorithms developed at Stanford University and is a multi-function digital audio processor for sample rate/data format conversion, monitoring, measurement, debugging and correction for professional and consumer digital audio.

The company's Acoustic Bit Correction assures optimum clean-up of distortion and noise modulation common to digital transfer. The unit provides simultaneous solutions to sample rate conversion, bit reduction, digital transfers, sonic enhancement, jitter removal, calibration, and troubleshooting.

Multimedia features include word widths of 8, 12 and 16 bits; special dither and noise-shaping curves designed for multimedia; real-time audition mode for immediate evaluation; and dynamic QuickFit processing for increased dynamic range in 8-bit format.

The sample rate converter has top-rated audio, 133 dB noise floor, and 96 kilobytes of RAM. A reference meter bridge is designed for CD pre-mastering standards, digital test tones provide fully programmable amplitude, frequency, and tone destination; and signal analysis verifies the exact number of bits being produced.

For information: Audio Intervisual Design, 1155 N. La Brea Ave., West Hollywood, CA 90038, (213) 845-1155, FAX (213) 845-1170.



Volt Meters

Lightline's CineLoadMeter 2.5A voltmeter/battery discharger employs a crystal-accurate microprocessor to measure voltage and control the discharge of NiCad battery packs specifically designed for the motion picture and video production industries. The unit is designed for measuring the voltage of 12V and 24V battery packs by first applying a constant load (approximately 2.5 Amps, depending on input voltage) to the battery. The battery voltage is then read to give a realistic indication of battery condition. Also, by connecting the voltmeter to the top end of the power cable, the inherent voltage drop across the cable will be included in the measurement (approximately .1V to .3V at 2.5

Amps for a four-foot power cable). The meter is connected via one of the two XLR connectors found along the bottom edge of the case.

The unit is also designed as a NiCad battery pack discharger/drainer to help remove the harmful effects of cel memory. The meter employs a user-selectable cutoff voltage, accessed through the meter face. The meter then alternately applies and disconnects a load to the battery pack until the battery pack reaches the preset cutoff voltage. The meter then removes the load, and after two minutes, shuts down all non-essential circuitry including the display, indicating that cutoff voltage has been reached.

Also from Lightline is the L-100 Frequency/Volt Meter combination line frequency meter and voltmeter. The unit employs a crystal-controlled microprocessor for the accurate measurement of line frequency and line voltage, taken from the AC line to which it is plugged. It is capable of reading any frequency from 10.00 Hz to 99.99 Hz and any AC voltage between 65V RMS and 150V RMS.

The L-100 uses a "non-averaging" method to measure frequency. Instead of counting cycles over a reference time frame, then using that information to calculate the average frequency (a varying frequency will often average out to the correct frequency), the L-100 randomly samples one cycle at a time and bases its reading on that cycle measurement, thereby revealing any frequency variation.

The display can be set for either hertz or true RMS line voltage, and to alternate between hertz and volts approximately every ten seconds. The unit is packaged in a rugged, 4" X 5.5" X 1.5" steel and aluminum housing.

For information: Lightline Electronics, 7511 SW 69th Ave., #10, Portland, OR 97223.

Multimedia Console

The Winsted Corporation has developed new corner mini consoles for multimedia systems to accommodate computer and video combinations. The wraparound design provides easy access to all electronics equipment. Edit and VCR shelves adjust up and down in 1" increments for a custom fit. The top shelf is 18" deep. Ample work surface wraps

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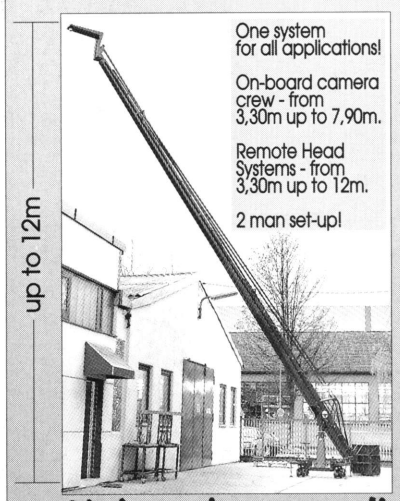
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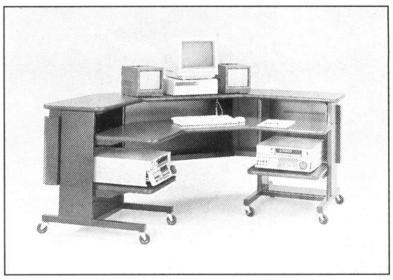
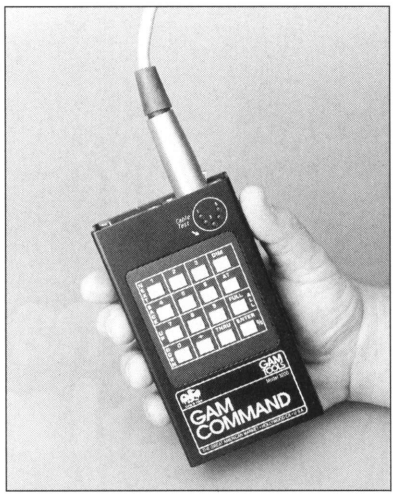


around to provide space for keyboards and other table-top electronic equipment. Base section features lift-off rear panels for easy access to back of electronic equipment. Dual wire raceway on back of modesty panel allows separation of AC and co-ax cables. Modular design assures future mix-and-match expansion.

For information: The Winsted Corporation, 10901 Hampshire Avenue South, Minneapolis, MN 55438, (612) 944-9050.



Remote Focus Gadget

The Great American Market's GamCommand is a handheld remote-focus DMX control center that will address any DMX device from channel 1 through 512. It is battery-operated and features a keypad address with simple English instructions. The unit is primarily a remote focus device, but also checks the DMX cable for continuity and shorts and will verify DMX signal from a control console. GamCommand can be used as an emergency backup for a light board, since it can fade up to 512 dimmers at one time. It can be used to operate DMX-controlled items on the workbench and for testing requirements.

For information: The Great American Market, 826 North Cole Avenue, Hollywood, CA 90038, (213) 461-0200, FAX (213) 461-4308.

Lens

Kinoptik's 9.8 mm f/1.8 Tegea for 35mm cameras covers an angle of 108 degrees without distortion with a multi-layer parabolic front element, a focusing range from infinity down to 1 ft., and an equidistant T-stop range from T2.3 to T22, both with smooth gear movements. It is available in Arriflex PL, Aaton and BNC mounts. A built-in slot accepts a 2" X 2" filter, while the wide-angle lens hood is optional.

For information: Heitz Service Corporation, P.O. Box 427, Woodside, NY 11377, (718) 565-0004, FAX (718) 565-2582.

Par Fixture

K 5600's Joker 1200 is a lightweight HMI-type Par fixture that weighs 10 ½ lbs. and fits in a one-cubic-foot box. A specular parabolic reflector delivers consistent color temperature and the axis-mounted lamp provides intense and symmetrical beam patterns.

K 5600's 30-volt, 200-watt Slimverter delivers 115 volts of AC power and is the only unit designed specifically to operate on 30-volt batteries for TV and motion picture applications. The unit will convert the company's Joker 200 HMI Par into a Sungun and will also power fluorescents and incandescents. It weighs 2.5 lbs. and measures 6"LX5"W X 1¾"H.

For information: K 5600, Inc., 10434 Burbank Blvd., North Hollywood, CA 91601, (818) 762-5756, FAX (818) 762-6629.

Motion-Control Products

The Linear Axis Arm is the latest introduction in Innovision's family of motion-control products, providing 36" of remote-controlled linear travel for cameras weighing up to 75 lbs. It is controlled by a joystick and is a companion for the company's Mini-Mover Pan & Tilt Head, accommodating it in upright and underslung modes. The Arm mounts easily to a dolly, jib arm, or horizontal work surface for a wide range of tabletop maneuvers, and its micro-stepping motor provides variable speeds of up to 4" per second.

The Mini-Mover conveys objects backwards and forwards, side to side, up and down, and in rotation. The

camera can also be moved inside, around, or through larger objects for unusual points of view. Dual joysticks provide smooth and accurate movement via the Brain Controller and offer up to four axes of movement simultaneously. Complex actions of up to ten minutes duration are stored in the Brain Controller for precise repetition. Speed and ramp time are fully adjustable.

For information: Innovision Optics, 1318 Second St., Suite 31, Santa Monica, CA 90401, (310) 394-5510.

Fresnel Light

Lowel's Fren-L 650 is the company's first fresnel light, capable of accepting 650, 500 and 300-watt lamps. It has a 7:1 focusing range, sharp shadow quality, and ball-bearing, rack-and-pinion lamp carriage. Other features include a double-wall convection cooling system, oversized, swing-down handle, and single-yoke design, which provides for a generous tilting range and helps to avoid cable snarls.

For information: Lowel-Light Manufacturing, Inc., 140 58th St., Brooklyn, NY 11220, (800) 334-3426, FAX (718) 921-0303.

Video Capture Boards

New video capture boards from Precision Digital Images provide a direct interface with the latest professional digital cameras for precise monochrome imaging on Apple Macintosh, Power Macintosh and Quadra computers. The IMAXX Advanced Digital (AD) and Standard Digital (SD) boards are powerful desktop imaging solutions that support digital cameras requiring 8-16 and 8-10 bits per pixel output, respectively.

A wide data bus and a user-friendly programmable interface provide optimal capturing capabilities for the most demanding imaging applications. The IMAXX also performs block mode transfers which allows for visualization of images in real time. IMAXX performance is further enhanced with bus mastering, giving the capture boards full control over the computer bus.

Both camera and video capture parameters are completely programmable on the boards. As a result, the AD and SD are compatible with a wide range of industry-standard cameras, including the Kodak MegaPlus Camera, Models 1.4, 4.2, 1.6, and XHF; the Hamamatsu C4742; the DVC-8/10; and the Xillix MicroImager 1400. Users can dynamically control capture and video selection with simple pull-down menus. PDI plans to add support for new digital cameras on an ongoing basis.

For information: PDI, 8711 148th Ave. NE, Redmond, WA 98052, (206) 882-0218, FAX (206) 867-9177.

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Arri Lighting's new single-ended 1200W Par, the Arrisun 12 SE, has specially desinged reflector and matching lenses which result in 50% more light and a larger lens selection. The company's unique focus mechanism allows precise control, as the beam diameters of each lens can be varied. This control, combined with four lenses and a frosted fresnel, make the Arrisun 12 one of the brightest and most controllable 1200W Pars available. The unit has a positive lamp lock for safe lamp installation and Arri's traditional cast extrusion construction.

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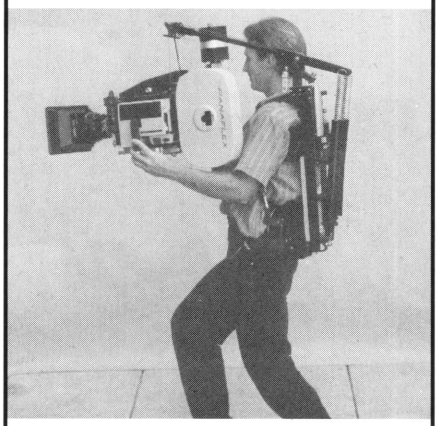

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There are both 1000 ft. and 400 ft. displacement type magazines. A new feature is the light valve which allows the operator to direct all the light to the viewing system, or to the video assist, or combo which splits the light between both viewing and video assist.

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For information: Fuji Photo Film, 555 Taxter Road, Elmsford, NY 10523, (914) 789-8148.

Super 8 Camera

Super 8 Sound has introduced the next generation Beaulieu Super 8 camera, the 7008 PROII. The camera is a replacement for the 7008 PRO camera and retains that camera's features, such as interchangeable lenses, a wide variety of power supply options and selectable film speeds from 4 to 80 fps. New to the PROII is a built-in microprocessor capable of running the camera in crystal to 23.976, 24, 25, 29.970 and 30fps with an accuracy comparable to Panavision standards. The microprocessor also self-calibrates the crystal every 1/10th of a second to avoid speed discrepancies under different shooting conditions. An advanced battery backup feature also allows storage of service-related data that can be accessed by terminal at a repair center.

The PROII transport system is designed to accommodate the new line of Super 8 negative films that have been perforated and slit from 35mm fine grain negative films. The transport system will also accept the reloadable 200ft. magazine currently under development at Super 8 Sound.

For information: Super 8 Sound, 2805 W. Magnolia Blvd., Burbank, CA 91505, (818) 848-5522.

New York's Sync Sound Makes Beavis and Butt-head Laugh

Part one of a two-part series on the cartoon cutups.

by Brooke Comer

Sync Sound, the audio post house that won rave reviews for the work they did on Laurel Entertainment's *The Stand*, gives Los Angeles producers yet another reason to post their East Coast projects in New York. Beavis and Butt-head, America's favorite cartoon characters, would snicker if they knew that Sync Sound gave aural dimension to their TV series, but that's exactly what sound editor John Bowen and his colleagues do. Bowen, producer John Lynn, and Lynn's assistant David Relly do all of the show's sound work — recording the voices, laying out scripts and slugging them with the animation directors, putting in and mixing sound effects. All work is done throughout the audio post facility: the script is laid out and edited on a 16-channel AMS Audiophile Spectra, and the music is mixed on a 24-track.

Animation offers sound editors a creative challenge, "especially *Beavis and Butt-head*, because the drawings are so simple," explains Bowen. "The sound is very full in contrast. You can hear every footstep, every breath and every scratch, and every other disgusting thing they do." Cartoons also offer sound editors more freedom to make things "bigger or different than they may appear, since nothing's 'real,'" says Bowen. "It's very subjective, in terms of what something looks like onscreen and how it will sound. We did a lot of foley work to come up with as many ideas as possible. It was a very cooperative atmosphere."

Bowen and his team developed the work process as they went along. "None of us had done anything like this before. We didn't know how far it was going to go," he recalls. *Beavis and Butt-head* creator Mike Judge does most of the voices (and at one time did them all, "until he got sick of doing them," says Bowen). "We'd play around with different speeds of recording until we got the right pitch for those adolescent voices," Bowen says. "Then we played around with takes. Mike would do a lot of different takes, and we'd spend time listening and evaluating which ones were the best to use."

Bowen, Lynn and Relly begin their work by sitting down and lining up the cartoon's dialogue tracks. Once the show has been animated and they've laid out the voices on the Audiophile, they archive it. "When the final animated show comes back, we load up that archive, then conform the dialogue to the animation."

The dialogue originally is lined up on a mag stripe at MTV, and Bowen will lock that with the workprint, aided by a scratch track provided by MTV. "At this point," says Bowen, "the negative is usually not cut." After the dialogue is lined up, Bowen, Lynn and Relly go through and check all the lip synchs and make notes. "Usually they've screened it with the scratch track and made sound notes asking us if we can get extra screams over a certain part."

The laughs are critical. "They're the hook point of the show," Bowen explains for those unfamiliar with Butt-head's low-sounding "huh-huh" and Beavis' edgy, high-pitched "heh-heh-heh." The laughs aren't doctored; Mike Judge does them cold, before he begins his dialogue, as a way to get into each character. "He does several sets of laughs before and after every line," says Bowen. "We don't play with it."

The famous Beavis and Butt-head laughs are "kind of a musical thing. We try to get a good staggering. Setting those laughs up is like putting together a little piece of music. It's like a kick drum

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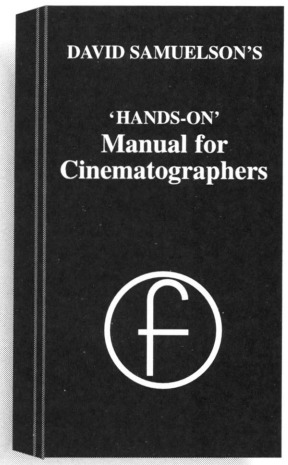

This book covers everything the operator in the field needs to know: from batteries through camera choice, maintenance and threading diagrams, electricity on location, equipment checklists, film stock, lenses, light and color. The mathematics of cinematography section gives information on formulas, tables covering all aspects of Imperial/metric conversions, electricity, exposure, film length and running times, light and optics. $49.95

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and a snare drum."

Sound effects are next. In keeping with the animal simplicity that is integral to Beavis and Butt-head's characters, sound effects are spontaneous, real, and rarely canned. "When we need a belch, we bring in a can of soda, open up the mike, and get somebody to really belch. Often, Mike will work up a belch in his booth." The only canned effects are tire sounds, "and really hard, long effects sounds."

Bowen gets sound effects three different ways. First, there's the sound library. "John and Dave take the storyboard and go in with the effects person and pull whatever effects are needed well before the show is animated," he explains. Or there's the second method: "we have a generic archive for cartoon sounds, full of the basic sound effects you always need like whooshing, for a door swinging open fast, or an electrical arcing, kind of a nunhh-bzt-bzt. We use those so often we archived them." The third way of getting sounds effects is in the foley room, "where John's really a master," says Bowen of producer Lynn. "He's able to take one look at something and figure out what would work as a sound effect."

All the fine tuning is done by cutting on the Audiophile, which is quick and efficient; "from the start to the end, it takes eight hours to do a five- or six-minute cartoon," Bowen explains.

The last step in the process has Bowen and company looking through the cartoon to determine what music is needed. MTV has a blanket license with APM, a production music library, which furnishes "tons of disks worth of music" for the series, though some of Bowen's work involves hunting down appropriate, unusual music. While most may come from APM, there's always the occasional need for something independently produced. "The music cutting is fun too," says Bowen. "We have to pull music from the archives from time to time, since the show tends to make fun of the Fifties, Sixties or Seventies. We look for music that typifies that time."

Next month we look at the Animation Studio and see how New York's animation community is gearing up with four MTV cartoons and a brand-new, fully functional studio.

Books in Review

by George Turner

How Did They Do It?

by Christopher W. Baker
Alpha Books, 182 pages, paper, $20

Subtitled "Computer Illusion in Film & TV," this large-format book furnishes a lot of information about the subject. Those of us who said computer imagery could never take the place of any of the traditional methods of creating film illusions had to choke down our own words after encountering the likes of *Terminator 2, The Abyss, Death Becomes Her* and (especially) *Jurassic Park.* As Carl Rosendahl, president of Pacific Data Images, says in the foreword, "Hollywood has gone digital and the old ways are dying."

The level of sophistication seen nightly in recent TV commercials is almost frighteningly high. Many of the veteran visual effects artists one meets have sweated profusely at some point in their careers while giving life one frame at a time to the Pillsbury Doughboy or some other stop-motion elf. Today only minimal perspiration is necessary to make the little fellows gambol about. Baker shows us how it's done today, as well as how a speeding car changes into a leaping Exxon tiger, what makes the crash dummies tick, how the Lexus sheds its skin, how company logos are made to fly and twist through space, etc.

What the computer has done to unshackle animation, as we have seen in the clock tower chase in *The Great Mouse Detective* and the stampeding animals in *The Lion King,* is amazing. Possibly more importantly, it has made quality animation affordable again. Then there are the big-screen special-venue films at theme parks, Las Vegas casinos, museums, fairs and pavilions. Even on huge screens some of the digital effects defy detection. And, like the Energizer bunny, it all just keeps going and going, with new ideas erupting with astonishing regularity.

Baker's well conceived and handsomely executed book is a painless way to learn a lot about morphing, motion blur, 3-D animation, motion control, and all the other techniques available via computer. There are one or more color illustrations on almost every oversized page, and the text is surprisingly easy to grasp.

FDR's Moviemaker

by Pare Lorenz
University of Nevada Press, 200 pages, cloth, $14.95

Pare Lorenz ranks among the great documentary filmmakers, in company with the likes of Flaherty, Ivens, Sucksdorff and Grierson. His fame rests largely on his first two documentaries, *The Plow That Broke the Plains* (1936) and *The River* (1938), which were made for Franklin D. Roosevelt's U.S. Resettlement Administration while we were in the throes of the Great Depression. He was a prolific writer and film critic, a tough one who was fired by William Randolph Hearst because he called the much-admired John Barrymore version of *Svengali* "trashy." (It's just possible that Hearst may have been put off by Lorenz's leftish views as well). Lorenz had never before made a motion picture.

Plow vividly described life in the Dust Bowl during a record drought (as a Dust Bowl survivor, this reviewer can testify that this film really told it like it was). The plight of the people of the Dust Bowl is summed up in the picture as "Blown out, baked out, and broke." *The River* is a history of the Mississippi River Basin, its disastrous floods, and the work of the Tennessee Valley Authority to rescue the land from death by erosion.

These pictures had terrific impact at the time they were made and today they have real importance historically. Suites from Virgil Thomson's musical scores for both are in the standard symphonic repertoire. Memorable indeed are the hard-edged and imaginative photographic images by Ralph Steiner,

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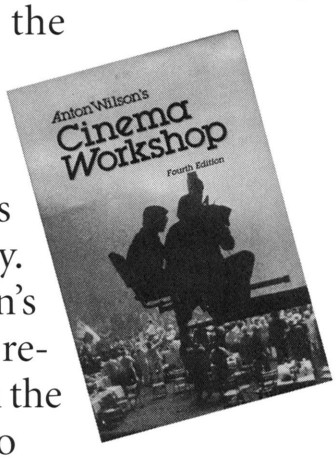

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Paul Strand, Floyd Crosby, ASC, Willard Van der Veer, ASC, Paul Ivano, ASC, Stacy Woodard and Leo Hurwitz. Lorenz's scripts, which are included (as are those of two later productions, the unfinished *Ecce Homo* and *The Fight For Life),* read like poetry.

Lorenz, who has died since this book went to press, was slavishly devoted to Franklin Roosevelt and his ideals. He took pride in how the President introduced him at a White House dinner: ". . . he's my shooter. He photographs America to show what it's like to our people." Although he spent a very active life, much of it in government service, Lorenz made only three completed movies. Like the films themselves, this book makes one wish there had been more.

Harold Lloyd:
A Bio-Bibliography
by Annette M. D'Agostino
Greenwood, 320 pages,
cloth, $59.95

Harold Lloyd was for a time the wealthiest man in movies. For lovers of high-grade comedy, he was worth every dime he made. With Chaplin and Keaton he was one of the three great comedians of the silent film (many of us would make that five, adding Laurel and Hardy to the pantheon), and one of the more meticulous creative talents the industry has produced. His career in talkies was less successful, yet even those pictures display flashes of brilliance.

D'Agostino has done a grand job of putting together the salient details of Lloyd's life and work. There is an invaluable chronology of events from his birth in 1893 to the issuing of his commemorative stamp in 1994. Also included are a biography, a film-by-film discussion of his movie work as actor and producer, and detailed accounts of his work in radio and television, his music and recordings, and his awards, honors and tributes. The film section is remarkable in covering even his early work as a bit player at Balboa Studio in San Diego, his guest appearances, newsreel appearances, and the detailed casts, credits and story synopses of all the short subjects and features. The large, annotated bibliography lists 284 articles, interviews and books by or about Lloyd.

This is the 52nd of a series of bio-bibliographies of varying quality, and is among the better ones.

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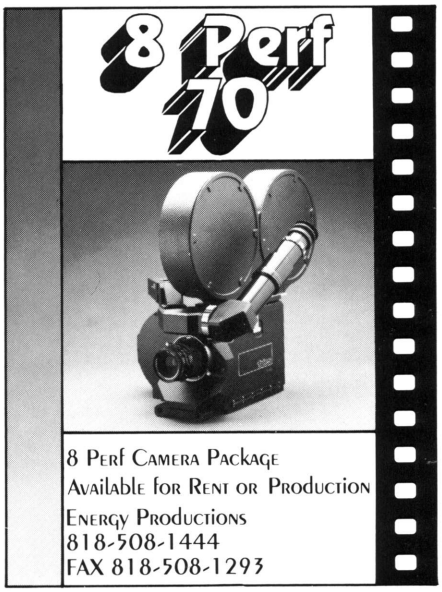

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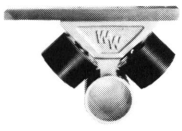

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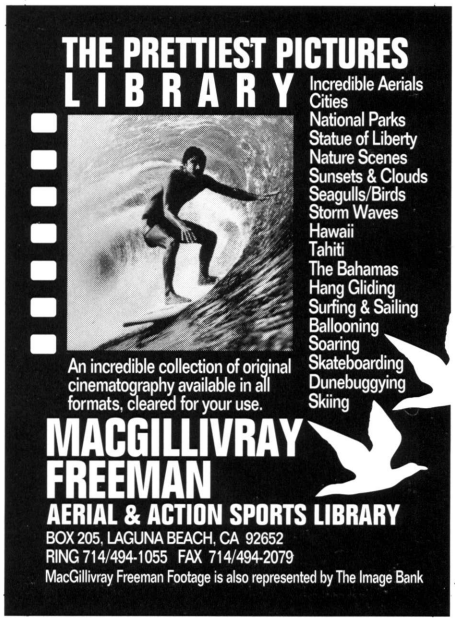

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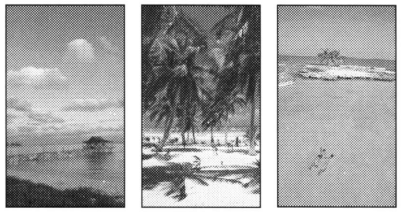

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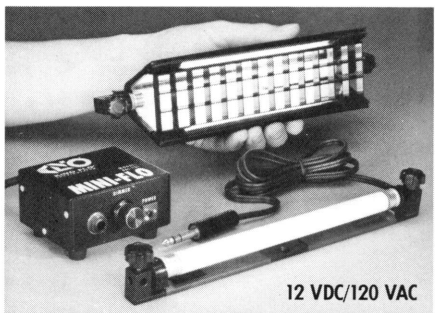

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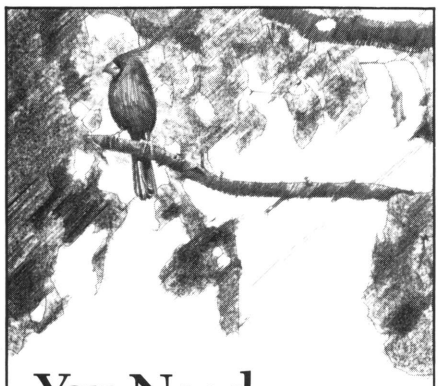

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From The Clubhouse

Two new active members, Ed Lachman and Sandi Sissel (profiled in this issue), were recently admitted into the ASC ranks. One of Ed Lachman's first director of photography credits was the Maysles brothers' 1974 documentary *Christo's Valley Curtain*, which won a Gold Ribbon at the American Film Festival and was nominated for an Academy Award. In 1976 he worked with director Werner Herzog on *How Much Wood Could a Woodchuck Chuck* and *La Soufriere,* the latter of which made the Cannes, Berlin, and New York Film Festivals.

After that was *Blue Train*, a short film he also directed; Jean-Luc Godard's *Passion — The Script;* and *Trapped.* Documentary credits include 1982's *Say Amen, Somebody* for director George Nierenberg, which won an Academy Award nomination and played at the Cannes and New York Festivals; *Ornette Coleman — Made in America*; and PBS' 1984 *The World of Mother Theresa* and *Von Karjan in Salzburg.* Also for PBS, part of their Experimental Film Series, was 1989's *Route 66.*

Credits on music films include *Songs for Drella*, Lou Reed's and John Cale's concert, which he also directed; Annie Lennox' performance on the *Red, Hot & Blue* Cole Porter/AIDS Benefit Film; and *Soldiers of Music*, about Mitislav Rostropovich's return to Russia to work with the National Symphony, on which Lachman was co-director of photography.

He shared director of photography credit on the feature films *The American Friend*, by Wim Wenders, and Bernardo Bertolucci's *La Luna.* Other feature credits include Wenders' *Lightning Over Water* and *Tokyo-Ga, Hail Hail Rock 'n' Roll*, Maroun Baghdad's *Little Wars*, and Susan Seidelman's films *Desperately Seeking Susan* and *Making Mr. Right.* Lachman has also worked with directors Volker Schlondörff on *Gathering of Old Men*, Dennis Hopper on *Backtrack*, David Byrne on *True Stories*, Paul Schrader on *Light Sleeper*, and, most recently, Stacy Cochran on *My New Gun.*

Lachman, who divides his work between the United States and Europe, also has worked extensively in commercials for clients such as Mazda, General Motors, and Levi's.

Sandi Sissel, a native of Paris, Texas, started her career in the early Seventies making educational films for the University of Wisconsin while teaching film studies there. Shortly thereafter she moved to New York City and began working as a freelance cinematographer in 16mm. In 1974 she joined the union and went on staff first at NBC News and then two years later at ABC News, where she won an Emmy award.

In 1978 she began freelancing again, working for such shows as *20/20* and *60 Minutes*, and shooting numerous documentaries, among them *Mother Teresa* and PBS' *Global Assembly*, which won Emmy Awards; *Broken Treaty at Battle Mountain* (for Robert Redford), *Seeing Red,* and *Jane Goodall*, which were nominated for Oscars; PBS' *Witness to War* and *Americas in Transition*, which won Academy Awards; and *Chicken Ranch*, which she also directed and which won a British Academy Award.

In the late Seventies Sissel started working in 35mm and began operating on commercials with directors of photography such as Robby Müller, Ian Wilson, Chris Menges, Haskell Wexler, ASC and Andrzej Bartkowiak. She also worked as an operator on features for Müller, Fred Elmes, ASC and Jan DeBont, ASC on films such as *The Believers* and *Jumpin Jack Flash* before getting a break as a director of photography in 1987 with

continued on page 106

continued from page 105
the feature *Salaam Bombay.* That film won the Camera d'Or at Cannes and was nominated for an Academy Award for foreign film.

The next year she settled in California, and has since been working in both television and features. Her credits include *The Wonder Years* for ABC, CBS' movie of the week *The Flash, Rising Son* for TNT, *Drag Strip Girl* for Showtime, NBC's mini-series *Drug Wars, In the Company of Darkness* for CBS, *Full Eclipse* for HBO, and the features *The People Under the Stairs* and Disney's *Camp Nowhere.*

☙ ☙ ☙

At Showbiz Expo West in Los Angeles this past June, Steven Poster, ASC served as moderator on a panel of cinematographers — ASC members Allen Daviau, Rob Hummel, Dean Cundey, John Bailey, Stephen Burum, and Victor Kemper — addressing the topic "Cinematography Fundamentals and Tomorrow's Platforms." The group discussed the responsibilities of the cinematographer, the forms they see their jobs taking in the future, their current and projected future involvement in postproduction, and advanced television. We'll be covering Poster's speech more thoroughly in a later issue.

☙ ☙ ☙

On July 20, the Technology Council of the Motion Picture and Television Industries, in association with the Director's Guild of America, hosted a repeat performance of its very successful Formats Seminar. The evening was introduced by Tech Council president and ASC honorary member Bud Stone of Deluxe Labs and led by ASC associate member Rob Hummel. The seminar compares every major format in use in the film industry, from Super 16 to 65/70mm, on a level playing field. The goal of the experiment is to answer long-debated questions about the image quality of each format and its attendant processes. The test footage used in the comparisons was photographed by ASC members Steven Poster and John Hora. For more information on the Formats Seminar, contact the Tech Council at 818-766-7780. ☙

In Memoriam

Robert B. Hauser, ASC, who brought a distinctive photographic style to numerous television series and feature productions, died on July 8 at the age of 75.

Born in Spokane, Washington, on March 25, 1919, Hauser moved to Los Angeles as a youth and started his long career in motion pictures as a messenger boy at RKO Radio's Hollywood studio in 1938. At this time he began working nights on his own to become a film loader. He also studied photography at the Art Center School in Pasadena. In 1941 he officially became a film loader at the studio.

In 1942, shortly after the sneak attack on Pearl Harbor, Hauser enlisted in the U.S. Army Signal Corps as a combat photographer. He returned to his old film loading job at RKO in 1946 and quickly graduated to second assistant cameraman. Later he became a first assistant cameraman, and in 1956 he moved up to camera operator under the tutelage of Joe Novak, ASC. Two years later, Novak passed away and Hauser was given the opportunity to become a director of photography.

Lucille Ball and Desi Arnaz had purchased the RKO studio for their Desilu Productions and a wide variety of television productions were on the schedule. Hauser photographed several series for Desilu, including *The Breaking Point, Yancey Derringer* with Jock Mahoney, *Man With a Camera* with Charles Bronson, two years of *Wyatt Earp* with Hugh O'Brien, and the excellent omnibus show, *Desilu Playhouse.* For MGM Hauser lent a realistic, documentary photographic style to *Combat,* the popular war-story series which starred Vic Morrow and Rick Jason. Later he worked for Twentieth Century-Fox on *Bus Stop.*

In 1968, Hauser returned to theatrical feature production on Paramount's filmed version of Neil Simon's play *The Odd Couple,* which starred Walter Matthau and Jack Lemmon. Thus began a string of commercially successful projects for Hauser, including the Cinema Center Films project *Hail, Hero!, A Man Called Horse* with Richard Harris and Judith Anderson for National General Pictures, and *Norwood* with Hal B. Wallis and Paramount Pictures.

In 1971, Cinerama Pictures engaged Hauser to photograph the horror feature *Willard,* starring Ernest Borgnine, Sondra Locke, and Bruce Davison. The picture, about a boy and his rodents, was a surprise hit and spawned the sequel (and a hit single) *Ben.* Also released in 1971 was the Steve McQueen racing picture *Le Mans,* which Hauser co-photographed with the legendary René Gruissart, who had taken part in the 1925 production of *Ben Hur* at MGM.

Other features Hauser shot during the 1970s were *The Brotherhood of the Bell,* Warner Bros.' *The Frisco Kid,* which featured Gene Wilder, *Walking Tall - The Final Chapter* for AIP, *Lost in the Stars, Mean Dog Blues, Soldier Blue,* and *Twilight's Last Gleaming.*

Beginning in the late 70s, Hauser brought his extensive experience to a string of movies of the week, including *When Hell Was in Session, Christmas Lilies of the Field, Fugitive Family, Alcatraz, The Whole Shocking Story, Terror Among Us, The Day the Loving Stopped, No Place to Hide, Killjoy, Seven Brides for Seven Brothers, Airwolf,* and *Jessie.* Hauser retired in 1984.

Services were held at The Neighborhood Church in Palos Verdes, California. The family requests that in lieu of flowers, donations be sent to The Hospice Foundation, 2601 Airport Drive #110, Torrance, California 90595-6193. ☙

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Hiring at the Gate

by James Glennon, ASC

"Hiring at the gate" — that's what Jack Warner told me he had to do in the years before unions. Men from the studio departments would go to the main gate looking for workers. There they would find 50 or so people milling around with lunch boxes in hand, waiting for a work call.

"I need ten men who can strike an arc." All fifty would raise their hands.

"It was a mess. Sometimes the guys hired would lose a finger trying to fool with those arcs." Mr.Warner exhaled more cigar smoke into his already smokey office. It was 8 a.m. and I had just delivered his mail. "When the actors became stars, the shooting schedules became critical. Expense contracts had to be met. We needed to organize the labor. We needed trained, reliable people, more each day. Hiring at the gate wasn't working."

"... the skilled worker is our country's greatest asset ..."

I stood there as he wrote a memo to Charlie Greenlaw over in the production building. Every morning it was the same — cigar smoke and sage advice. He liked to help the mailroom "kids" and gave each one of us six months at $60 per week to find a place in the studio — or "scram." Every six months he'd bring in a new bunch. He knew I could type and was in college, so he figured I should move over to "the production end of things. We need smart guys over there." I told him I wanted to be a cameraman. "You want to be a cameraman, buy a camera. Now beat it."

Jack Warner would watch the dailies each morning and woe to the producer whose star actress didn't look good. The actors had to be fed every six hours and sent home in time for sleep. "I'm paying a lot of money for that face," Warner would say. "Make damned sure she's rested."

In the years long before OSHA, Warner said that he had hired a safety and efficiency expert. The man came out from Washington and spent a week walking around the place. It seems the motion picture industry had a very high rate of injury, second only to steel. Well, noting the heavy equipment moving on uneven floors and the men working overhead with hand tools, the expert recommended that all people on the stage floor be required to wear steel-toed shoes and hard hats. Warner just stared at him and chewed on his cigar. The expert went on to pick out the one person on the set that the company could certainly do without — he just didn't seem to do anything: the director of photography.

I asked Mr. Warner what happened to this fellow. "He didn't last" was all he said.

Meal periods, turnaround time, safety on the set — all were put in place to protect the actor and subsequently written into the then-newly forming union contracts. And now we have these same things included in the State Labor Code. So, the question is, if we get a national health care plan and these labor guidelines are covered in state law, what is the purpose of the union? As individuals we can easily set up a very good retirement plan, one that even allows access to our funds at any time. So where are we going with this union business?

I think Jack Warner had the answer, and as some of our new producers are now finding out, hiring at the gate doesn't work. A skilled and reliable work force will always be competitive — and usually hired. Production will increase but crews will be smaller. And if other U.S. industries are an indicator, we'll be working in some pretty strange places for a while, always in pursuit of the lowest labor wage. The key for the next few years is our constant improvement and organization of the craftsmen's skill. There was a time when the unions were very valuable to the producers as a source of reliable and experienced people. Remember, the producers started the experience roster for a reason.

Can we reinstate the union as a hiring source? I think so. And we must, because the skilled worker is our country's greatest asset and because when we need a good technician quickly, we won't have to try to find one at the main gate.

The opinions expressed in this column are those of the author, and do not necessarily reflect the views of the ASC or of American Cinematographer *magazine. This column is intended as a sounding board.* AC *encourages readers to respond to the issues raised. — Ed.*

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THOMAS J. MUNN *during focusing for LOHENGRIN at The San Francisco Opera.*

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THOMAS J. MUNN
Lighting Designer

THOMAS J. MUNN
In his fifteenth year at The San Francisco Opera, Munn has lighted over 130 productions. He has designed scenery and lighting for Broadway, regional theatre, ballet, film, television, and industrials, plus major operatic productions in the U.S. and Europe.

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